VirginiaTech
Invent the Future®

2010-11

annual **report**

Message from President Charles W. Steger

Earlier this year I wrote in Virginia Tech Magazine that the president of a large university is constantly juggling myriad projects, constituency concerns, meetings, and requests. And funding problems.

It's well known that during the past decade, revenue from the state for public higher education institutions has faded. At Virginia Tech, it's fallen from $182.2 million in 2000-01 to $131 million in 2011-12, representing a 49.6 percent drop in buying power when adjusted for inflation. In the same time span, the share of education costs at Tech funded by the state has fallen from 58.2 percent to 28 percent, and state support per student has fallen from $9,501 to about $4,300, adjusted for inflation.

We were quite appreciative in spring 2011 when Gov. Robert McDonnell recommended and the General Assembly approved increases that added $3 million back to our coffers for 2011-12, but as of this writing there seems little doubt that further state budget difficulties are imminent.

This reality has forced Virginia Tech to figure out evolving revenue solutions—a new business model, if you will. There are many pieces to this particular puzzle, and at this point some of the pieces are still missing.

We've found ways to deliver more with less. For example, despite the loss in state funding, Virginia Tech is now educating 2,200 more students from the commonwealth than it did in 2003. Virginia Cooperative Extension, which has been improving communities for almost a century, was asked by the General Assembly for a restructuring plan before refocusing its efforts on listening to stakeholders and delivering high-impact programs—all while operating under a budget that is $10 million less than in 2007.

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The Virginia Tech Board of Visitors has been forced to raise tuition almost annually for the past decade. In-state students now pay $10,506 in tuition and mandatory fees, and in 2010-11 the amount of revenue for the University Division from out-of-state student tuition surpassed the total from the state. As you will read in this report, the university has been bolstering its need-based financial aid program, but we know that continuing increases of the sort parents and students have had to shoulder in recent years is simply unsustainable. The university and the state are working on other options.

One major development was sweeping legislation that resulted from the Governor's Higher Education Commission and ideas first advanced by the Virginia Business Higher Education Council's Grow by Degrees program. The Virginia Higher Education Opportunity Act of 2011, commonly referred to as "TJ 21," marked a serious commitment from the General Assembly and the governor to increase Virginia undergraduate enrollment and degree production, promote university-based research to stimulate the economy, and provide a sustained funding policy for higher education.

Goals of the legislation include establishing a definition for low- and middle-income families, outlining performance criteria for measuring financial incentives offered to institutions through the new funding policy, and determining appropriate benefits and consequences for incentives in an institution's six-year plan. To encourage Virginia undergraduate enrollment, the funding model will incorporate a per-student appropriation for Virginia students.

To improve economic development and quality of life, the governor has called for an additional 100,000 college degrees to be awarded during the next 15 years, and TJ 21 creates a public-private partnership to develop a plan to produce more degrees in the high-demand, high-impact fields of science, technology, engineering, mathematics, and medicine—all areas of strength for our university. This partnership will also attempt to encourage greater coordination, innovation, and private collaboration between higher education and public schools. The effort will consist of leaders from both the public and private sectors, with representation from the scientific community, relevant state and local government officials, and educational experts.

Virginia Tech has known for years now that those public-private partnerships are key to its developing revenue

model. Universities are job engines. In the Roanoke and New River valleys, Tech is responsible for creating thousands of jobs outside of its own employees, and the growth essential to the burgeoning tech sector. In another example, Rolls Royce cited the intellectual capital at Tech and the University of Virginia as decision-drivers when it elected to invest $170 million in Virginia to build its first U.S. aircraft engine component factory. In conjunction with Rolls Royce, the universities are developing the Commonwealth Center for Advanced Manufacturing near Petersburg and a Jet Propulsion Lab here in Blacksburg.

As you will read later in this report, Virginia Tech is involved in many more cooperative ventures that do or will result in economic benefits for communities, and, frankly, for the university, as well.

In the research arena, the university expanded its efforts to spread its discoveries for the benefit of society and to increase the revenue stream from research. Virginia Tech opened a research center in Northern Virginia and started the second phase of its research park adjacent to the main campus. The university formed the Virginia Tech Applied Research Corp. to manage large contract projects and collaborated with Carilion Clinic to launch the Virginia Tech Carilion School of Medicine and Research Institute.

Finally, of course, the university finished its most successful fundraising effort ever, The Campaign for Virginia Tech: Invent the Future. In 2010, Tech was one of just 36 universities in the nation attempting to raise $1 billion or more—and not just attempting, but succeeding. As a result, part of this report is devoted to demonstrating how the entire Virginia Tech community benefits.

The recent recession has touched everybody in some way, but when the squeeze hits the very institutions that educate tomorrow's leaders and entrepreneurs and spur economic development and growth, the impact is even more damaging. Nonetheless, as we work ever harder to fit all of the funding puzzle pieces together, you can be assured that we are also making sure that Virginia Tech continues to offer high-quality, high-value educational opportunities for the future to the commonwealth, the nation, and the world.

Building the future

Before Virginia Tech started the quiet phase of the Campaign for Virginia Tech: Invent the Future, it was clear that if the university was going to expand its fields of excellence while continuing to serve the commonwealth at the level expected of a land-grant institution, it would need increasing generosity from its alumni, friends, and industry.

Private funds—a source of revenue that was just a small resource for most public higher education institutions just a few decades ago—became more and more important, especially during the eight-year campaign. In 2003, there were some who doubted whether the university could reach the lofty goal of $1 billion. The dollar figure represented a new level of ambition for an institution that had raised $337 million in its prior campaign. During the course of the effort, however, the desire of the university community to achieve the goal proved itself equal to the task—equal and then some. By the end of this past fiscal year, the Virginia Tech leadership knew the campaign had been an unprecedented triumph, raising $1.11 billion despite exceedingly trying economic times.

University leaders identified five funding priorities for the Campaign for Virginia Tech: Invent the Future: academic excellence, the undergraduate experience, research facilities, Virginia Tech and the community, and the President's Discovery Fund. Long before the counting stopped, students, faculty members, alumni, and citizens of the commonwealth started witnessing the benefits of the campaign in these areas. In the 2010-11 year alone, new buildings, new scholarships, new professorships, new majors, and new research spurred in part by the resources and momentum generated by the campaign offer tangible proof of the effort's impact.

The most visible way that a major fundraising campaign changes a campus can be seen by looking at the skyline. At Virginia Tech, cranes and construction equipment have become a common sight as new facilities take shape, and the growth will continue as essential projects are transformed from ideas into action. During President Charles W. Steger's tenure, the university will have added more square footage than was added by any president before him. The gains have come in space for teaching, research, recreation, dining, housing, and more.

The Signature Engineering Building, the top priority in Virginia Tech's capital construction plan, became a reality when the state approved funding for its portion of the facility and Steger announced a record $25 million gift from a donor who wished to remain anonymous. The four-story, 155,000-square-foot building will rise near the corner of Prices Fork Road and Stanger Street.

Steger also announced $3 million in support of the project from the Quillen family of Southwest Virginia, led by alumnus Michael J. Quillen (civil engineering '71, M.S. '72), and the receipt of $17 million from the estate of the late Robert E. Hord Jr. (mechanical engineering '49, M.S. '50) in support of the mechanical and chemical engineering departments.

"This new building, as well as the many new scholarships and faculty assistance funds provided by donors over the life of our campaign, are helping our largest college to raise the bar even higher for engineering education in Virginia," Steger said.

If the college is to admit more students, particularly undergraduates, the new building is essential. Half of the engineering degrees issued in the commonwealth come from Virginia Tech.

"We have a much larger faculty than we did in the 1990s, we have a lot more students, and we have an urgent need for this kind of space," said Richard Benson, dean of the college. "We're the nation's third-largest producer of undergraduate engineers after Georgia Tech and Penn State."

Arts center on the rise

The tallest crane on campus at the moment is adjacent to Schultz Hall, working on one of the most important projects for the university and for the community at large, the Center for the Arts. When Steger became president, he expressed his desire for Tech to become a top-tier research university. As part of that goal, he also stressed the importance of the arts in preparing students to live and work in a global environment. Top universities, he said, have a comprehensive arts program and arts facilities to match the program.

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Composed of a complex of new and renovated buildings (including Schultz Hall), the $94 million center—partly funded by private contributions and university resources—is scheduled to open in 2013. It will include a 1,260-seat performance hall, a visual arts gallery, multidisciplinary laboratories, media facilities, and the new Institute for Creativity, Arts, and Technology. The mission of the institute is to facilitate transdisciplinary research in support of pre-K through 12th grade, undergraduate, and graduate education.

"I already have calls from artists around the country who have heard about the center and the burgeoning arts initiatives here at Virginia Tech," said Ruth Waalkes, executive director of the center. "They want to know more, and they want to be involved."

Agriculture and animals

Another important building that moved closer to construction is the 92,300-square-foot Human and Agricultural Biosciences Building I (HABBI). The structure is the first of four facilities that will form the Biosciences Precinct, 400,000 square feet of new research facilities at the corner of Duck Pond Drive and Washington Street designed to support the College of Agriculture and Life Sciences. HABBI will provide research and office space for the Department of Biological Systems Engineering and the Department of Food Science and Technology. Much of Virginia Tech's life-sciences research space was constructed prior to World War II and would be too costly to renovate.

"Our researchers will greatly benefit from the expanded space, which will house research programs on food safety, food packaging and processing, environmental quality analysis, bioenergy, renewable materials, systems biology, and nanotechnology, among other areas," said Saied Mostaghimi, associate dean for research and graduate studies.

Next door to HABBI's future home, two new buildings were already coming to life in 2010-11 at the Virginia-Maryland Regional College of Veterinary Medicine, as the college continues to prepare for growth in its instructional and research programs.

The $14.1 million, 30,000-square-foot Veterinary Medicine Instruction Addition will provide instructional space for a state-of-the art clinical techniques laboratory and will also provide faculty offices, student seminar space, and small conference areas. Additionally, the space will serve as a main entrance to the college and showcase a key visual element previously missing in veterinary college buildings: Hokie Stone.

Also under construction was the Infectious Disease Research Facility. The $10.5 million, 16,000-square-foot building will include laboratories and support space to accelerate translational medicine research. On tap for the future is the Translational Medicine Building, which the veterinary college is developing jointly with the College of Agriculture and Life Sciences and College of Science.

"The Translational Medicine Building would allow us to expand use of new approaches in training, clinical treatment, and research to benefit animal and human health," said Dr. Gerhardt Schurig, dean of the veterinary college. "This is the missing link between basic research and its practical application to real animal and human health problems."

In addition, a building that opened during 2010-11 has changed the way Tech welcomes the community at large. The two-story, 18,155-square-foot Visitor and Undergraduate Admissions Center on Prices Fork Road by the Inn at Virginia Tech is now the first facility visitors and prospective students visit instead of the small, residential-style welcome center on Southgate Drive.

Discovering the future

The research process at Virginia Tech, which was ranked 44th in the nation in National Science Foundation expenditures for fiscal year 2009 (the most recent number available), is undergoing enormous change and continues to evolve as an essential part of what drives the university. Today, the most successful research efforts are collaborative, and the results don't just answer old questions— they sometimes create new ones. University leaders recognize the need for modern, well-equipped research facilities to incubate innovation, and those structures must be flexible enough to bring together the wide array of multidisciplinary groups scattered across campus and even across regions.

In addition, Tech is working hard to find better ways to spread the dividends of that research across a broader spectrum of society.

Making an impression in Northern Virginia

The university took a huge step to expanding its research portfolio in summer 2011 when it opened the Virginia Tech Research Center—Arlington in a region that offers great opportunity for partnerships with corporate research entities and close proximity to government agencies and other public- and private-sector organizations.

"While Virginia Tech has long had a teaching and research presence in Northern Virginia, this facility allows us to take that next important step in research by affording us the opportunity to house many of our researchers in Northern Virginia under one roof," President Steger told the crowd at the ribbon-cutting ceremony. "Working together and in close proximity with private industry and

federal agencies, we will create new synergies that will further catalyze new research and new solutions to the most complex problems of the 21st century."

Particularly important for researchers and business is the building's status as one of the best-connected and most technologically advanced research facilities in the world. The building incorporates next-generation Internet capabilities with direct fiber access to National LambdaRail, Internet 2, and multiple federal networks. High-performance connectivity links this research center to Virginia Tech's main campus in Blacksburg, as well as to other major universities. The network provides access to international free electronic traffic exchange points in New York, Chicago, Seattle, Los Angeles, and Florida, and the building includes a secure data center for high-performance computing-based research.

A number of already established Virginia Tech research centers and institutes previously located throughout the Northern Virginia area moved to the seven-floor, 144,000-square-foot facility. These include the Advanced Research Institute; Arlington Innovation Center: Health Research; Center for Geospatial Information Technology; Center for Technology, Security, and Policy; Computational Bioinformatics and Bio-imaging Laboratory; Institute for Science, Culture, and Environment; Hume Center; Institute for Critical Technology and Applied Science; Virginia Bioinformatics Institute; and Virginia Tech Carilion Research Institute.

"A signature research building for Virginia Tech in the National Capital Region builds credibility among our sponsors, showing that we provide a local resource where we can demonstrate advanced applications of our research and discovery," said Saifur Rahman, director of the Advanced Research Institute.

Applying research on a larger scale

Equally important was the step Virginia Tech took in 2010-11 to expand the influence and benefits of its groundbreaking research with the formation of the Virginia Tech Applied Research Corporation (VT-ARC), headquartered in Blacksburg and with offices in the new Arlington facility. A private nonprofit corporation affiliated with Tech, VT-ARC was established to foster applied research and development and to manage large-contract research projects.

"We created the Virginia Tech Applied Research Corporation as an important feature in Virginia Tech's rise as a world-class research institution," Steger said. "VT-ARC will leverage Virginia Tech research toward solving some of our nation's most critical challenges in intelligence, cyber and IT, national security, health, and energy.

The university's traditional research is funded by grants with the research embedded in the academic mission and managed by faculty members. VT-ARC's focus is applied research funded by clients, carried out by teams with experienced project managers working according to contractual time and materials agreements.

Expansion at the CRC and in Roanoke

Virginia Tech-affiliated research that helps society and provides jobs is expanding in other areas, as well. The Virginia Tech Corporate Research Center (CRC), which was named the 2010 Outstanding Research Park by the Association of University Research Parks, completed its successful 25-year build-out of the original concept and entered a second phase by embarking on construction of $4 million worth of roads and utilities that will allow the park to more than double in size. The CRC is home to more than 140 companies that employ more than 2,200 people and that also feed more than $1 million of their own research into the university.

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Another rapidly growing entity is the Virginia Tech Carilion Research Institute, which officially opened in September 2010. Founding Executive Director Michael Friedlander has recruited internationally recognized biomedical scientists in addiction, brain imaging and human cognition, childhood development, traumatic brain injury, cardiac development, and cancer. The institute employs more than 60 people, including 25 doctoral-level scientists who have come to Roanoke from such leading institutions as Harvard Medical School, Brandeis University, Baylor College of Medicine, the National Institutes of Health, and Georgetown University. These luminaries attracted or brought with them federal and private grants valued at more than $7 million per year to support their research.

"The Virginia Tech Carilion Research Institute will make transformative scientific advances in understanding and addressing the fundamental processes of human health and disease, contribute to training the next generation of leading biomedical scientists, facilitate discovery-based medical education, and sustain and strengthen the Virginia Tech-Carilion partnership," said Friedlander. "We are developing what should become one of the nation's premier biomedical research environments."

For instance, Pearl Chiu, assistant professor with the institute, received a $1.1 million National Institute of Mental Health Biobehavioral Research Award for Innovative New Scientists to study depression and substance abuse. She will use functional magnetic resonance imaging (fMRI) to investigate why depression and substance abuse occur together so often, and to quantify the conditions as disorders on a continuum of motivation difficulties.

Read Montague, who came to Tech from the Baylor College of Medicine, is the world leader in the use of fMRI to investigate how the human brain creates and utilizes social cognition. His work, strongly based in computation and mathematics, has provided unique insights into the normal human brain's ability to make decisions as well as how such functions are affected by conditions like autism, personality disorders, and addiction and substance abuse.

To firm up research collaboration between the university and Carilion Clinic, the Virginia Tech Board of Visitors authorized the university to create a Health Science Division. The expanded partnership will further support the growth of Virginia Tech's research focused on the life sciences.

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Learning to collaborate

While Tech is building facilities that are able to house the type of collaborative work that research excellence requires, scientists still must learn to work in that environment. In one effort to train researchers for understanding different disciplines, the Virginia Tech colleges of Engineering, Science, and Agriculture and Life Sciences are using a $3 million grant from the NSF to launch a Ph.D. program aimed at preparing future researchers to solve emerging challenges at the intersection of engineering and biological sciences.

The Multi-Scale Transport in Environmental and Physiological Systems (MultiSTEPS) project is funded by NSF's Integrative Graduate Education and Research Traineeship (IGERT) program. MultiSTEPS is the fifth interdisciplinary program at Virginia Tech to be supported by IGERT, NSF's flagship training grant.

MultiSTEPS brings together an interdisciplinary cadre of experts from nine different academic departments to educate graduate students on issues of biological transport, such as fluid motion, that affect the development and health of organisms, the viability of ecosystems, and growth of the global economy.

"Understanding, predicting, and controlling transport processes, such as fluid motion, are key to solving important biological and environmental problems in targeted drug delivery for the human body, preventing cancer cell metastasis, and controlling the spread of pollution and disease," said Mark Stremler, associate professor of engineering science and mechanics and a leader of the project.

A small sampling of research in 2010-11 includes:

◆ Engineering students traveled to the Daytona International Speedway's Rolex 24 race to debut second-generation Blind Driver Challenge vehicles that allow the blind to drive. Under the leadership of College of Engineering Associate Professor Dennis Hong, the modified 2010 Ford Escape Hybrid SUVs are part of the ongoing challenge, a collaborative effort between Tech, the nonprofit National Federation of the Blind, and Blacksburg-based TORC Technologies. As part of the public debut, a blind person drove one of the vehicles on the inner track of the racing landmark before the annual 24-hour endurance race for sports cars.

◆ The U.S. Agency for International Development awarded the Office of International Research, Education, and Development $28 million to improve agricultural education at the college level in Senegal. Partnering with four American universities as well as with Senegalese agriculture experts, Virginia Tech will lead the five-year program to restructure the agriculture curricula at Senegal's universities, making the programs more relevant to today's needs. The project will employ the U.S. land-grant model.

◆ The Virginia Tech-Wake Forest University Center for Injury Biomechanics was awarded a $2.8 million contract by the U.S. Army Medical Research and Materiel Command for the second phase of a project focusing on brain and eye injuries in military personnel. Using experimental and computational models, researchers will investigate blast-induced brain trauma; such occurrences have become the signature injury of most military operations.

◆ The National Institute of Allergy and Infectious Diseases, part of the National Institutes of Health, awarded a $10.6 million grant to researchers at the Virginia Bioinformatics Institute and collaborators to determine how the human immune system responds to infection by pathogens of the gut.

◆ An international consortium of researchers completed the majority of the genome sequence of the domesticated turkey, thanks in part to the efforts of Virginia Tech faculty members. In 2008, the research consortium set out to map the genetic blueprint for the domesticated turkey. The following year, Virginia Tech and the University of Minnesota received a two-year, $900,000 grant from the U.S. Department of Agriculture to complete the genome sequence, which promises new data for avian researchers and, ultimately, a better quality product for turkey producers and consumers.

◆ A new method for treating breast cancer is showing early promise in pre-clinical trials. Researchers in the College of Science developed molecular compounds that, when activated by laser light, have the ability to destroy cancer cells without many of the side effects of most current therapies. Popular Mechanics named the research team, led by professors Karen Brewer in chemistry and Brenda Winkel in biological sciences, a "Breakthrough Innovator."

◆ The College of Engineering released results of a new rating system of adult football helmets that is designed to reduce the risk of concussions. This biomechanical impact data study on football helmets represents the first time researchers have provided the public with comparative test results. One positive is that new technologies being used in most helmets have reduced the risk of concussions when compared to older models.

◆ Researchers at the Virginia-Maryland Regional College of Veterinary Medicine likely uncovered where the breakdown in the body's lymphocyte molecular regulatory machinery is occurring in people who have lupus, an autoimmune illness affecting more than 5 million people worldwide.

Educating for the future

Vitally important to any university is the quality and affordability of the undergraduate experience. Financial aid of all kinds is needed to bridge the gap between tuition and the actual cost of a university education. During the campaign, donors created 563 new scholarship endowments at Virginia Tech.

One important program aided during the campaign was the Presidential Scholarship Initiative, which in the fall of 2010 expanded to allow 97 low-income residents of the commonwealth to attend Virginia Tech at no cost.

The initiative started in 2009 with the first scholarships going to 49 members of the Class of 2013. Fifty additional students—representing 12 counties and 10 cities—joined the program in 2010-11. Nearly 75 percent of the 2010-11 recipients are the first in their families to go to college and their high school grade point averages and SAT scores were higher than those of the 2009-10 scholarship recipients.

Paula Robichaud (health and physical education '77), of Palo Alto, Calif., who made one of the five largest

scholarship-fund gifts to the university in fiscal 2010, is a significant supporter of the initiative. "I really think that a bright, fine, inquisitive mind can be born in a cave or can be born in a castle," said Robichaud. "One never knows how or where creativity or genius may be sparked."

The university plans to offer up to 50 scholarships to incoming undergraduates each year, for a maximum of 200 when the program is fully implemented. Success of the program is monitored annually (49 of the first 50 students earned scholarship renewals), and private donations are expected to eventually fund even more of the initiative.

Meanwhile, an endowment of $1.29 million created the Harry Bramhall Gilbert Meritorious Scholarship. Dozens of graduates from the Chesapeake Public School division will be awarded $5,000 apiece annually. Aspiring pediatrician Ying Chen, a biological sciences major, was one of the first recipients. She became interested in medicine as a young girl while serving as a translator for her parents whenever they took her younger brother to doctor appointments. "I knew even when I was a little girl that whatever profession I did take, I would want to help people," Chen said.

Residential colleges

Virginia Tech's gradual modernization of older residence halls is leading to more improvements in the undergraduate experience beyond the obvious upgrades in comfort. With the re-opening of East Ambler Johnston, 325 University Honors students were set to establish Tech's first residential college. West Ambler Johnston, which is being renovated during the 2011-12 academic year, will also re-open as a residential college for fall 2012 with another 800 spaces for interested students from any discipline.

The two residential colleges will provide a new type of housing environment, where students can actively participate in their education by engaging with peers and faculty members inside

Biological sciences major Ying Chen is one of the first students to receive the Harry Branhall Gilbert Meritorious Scholarship.

the residence hall. While already well-established at smaller liberal arts and Ivy League institutions, residential colleges will provide new opportunities for learning engagement at Tech, which serves the largest full-time student population in the state.

"The residential college reflects all aspects of student learning," said Frank Shushok, associate vice president for student affairs. "It touches intellectual life, social life, and contemplative life. It gives students a space where they can govern themselves, in collaboration with faculty and student affairs personnel."

While many living-learning communities are primarily for freshmen, the residential college model emphasizes a living arrangement where freshmen, sophomores, juniors, seniors, and graduate students live under the same roof. The residential colleges also feature apartments for live-in student affairs staff, offices for faculty, and two 2,300-square-foot faculty apartments, one in each residence hall. Each features three bedrooms, 2.5 bathrooms, and a large living room-kitchen area where resident faculty can share meals and entertain groups of students. The resident faculty members will play an instrumental role in the culture of the residential college and provide guidance in the academic aspects of student life.

Signature experience

In another first designed to enhance the undergraduate education experience, physics Professor Nahum Arav is fulfilling a dream: to introduce students to the beauty and wonders of the universe. His Introduction to Astronomy course was launched as the university's first "undergraduate signature experience," a unique learning environment that integrates a broad base of disciplines. Approximately 600 students from all majors were offered the chance to study astronomy and planetary science in an integrated multidisciplinary context using concepts from physics, chemistry, biology, history, and philosophy.

"In this class, we explore the solar system and discuss current astronomy topics, such as NASA space missions and asteroid collisions," Arav said. "It's consumer-friendly for a broad base of students and does not require a strong background in math or physics."

Arav and a team of experts from instructional design, learning technologies, and assessment created a model learning environment. Regular and guest lectures, high-quality movies, still images, and an audience response system provide a stimulating classroom experience.

"This class and others following this model will give undergraduate education at Virginia Tech a new, distinctive face, and provide our students with unique learning experiences which can only be found here," said Daniel Wubah, vice president and dean for undergraduate education.

Academics for the future

Strengthening and pursuing academic excellence, which is at the heart of all the university does, takes many forms. Part of the fundraising campaign focused on creating and sustaining endowed chairs and professorships at levels that will allow Tech to compete not only with other universities for the attention of the world's brightest minds, but with the private sector as well. Fellowships also give educators the intellectual breathing room they need to develop innovative classroom and research techniques.

Sixty-two new funds are helping or will be helping faculty members. These funds provided for named professorships or fellowships, supported particular types of research, or established faculty awards.

Among those endowments was the Blackwood Junior Faculty Fellowship, created in 2006 by Mary (psychology '73) and Willis (business administration '72) Blackwood of Midlothian, Va., and first awarded in 2010 to chemistry Assistant Professor Webster Santos.

Santos heads a research group seeking to develop compounds able to disrupt the progression of diseases such as HIV/AIDS and cancer. "I want to be able to use my organic chemistry knowledge to solve problems in medicine—in reality," Santos said.

In keeping with his goal of creating treatments that are put to use, Santos is helping start Bringing Science to Market, a science-based entrepreneurial program being organized by Virginia Tech's College of Science and Pamplin College of Business. One of the program's first steps will come this spring, when Santos and Professor Joseph Falkinham co-teach Drugs, Germs, and Entrepreneurship.

The university must also bolster, alter, or create academic programs that keep up with today's global innovations and

shifts in the job markets. For instance, in 2010-11, the Virginia Tech Board of Visitors moved to establish a new bachelor of science in meteorology, the only degree of its kind in Virginia. In addition, majors in real estate, biomedical engineering, nanoscience, and computational biology are in the works.

The meteorology degree, which will reside in the College of Natural Resources and Environment's geography department, will prepare students for careers in meteorology and weather forecasting with a significant focus on geospatial information technology, the third fastest-growing sector of the U.S. economy. Careers in the field are heavily concentrated in Virginia because of the prevalence of federal government agencies, defense industry contractors, and consulting firms that service government and industry clients.

"The new program is part of a much broader change going on in the College of Natural Resources and Environment," Dean Paul Winistorfer said. "To meet the needs of today's world and to prepare our students to be leaders in the natural resources and environmental arena, we are focusing our programs on the critical issues of sustainability, climate, and water."

Encouraging scientific excellence in students

In 2010-11, Virginia Tech was among 50 top research universities nationwide to receive a Precollege and Undergraduate Science Education Program award from the Howard Hughes Medical Institute (HHMI) to encourage university faculty to develop new ways to teach and inspire undergraduate students about science and research. The $1.4 million award, the university's first education award from HHMI, will help with yet another new academic program.

Under the leadership of Wubah, Tech is developing a "scieneering" minor that will unite all sciences with engineering. Students who pursue the minor will take courses in departments outside their major and participate in seminars exploring topics at the intersection of science and engineering. They will also be required to complete their capstone research project in a laboratory outside their major discipline. The scieneering program is Virginia Tech's first step toward developing the interdisciplinary undergraduate biomedical engineering program.

"The idea is to do something innovative for the students to prepare them for the challenges they will face in their future careers," said Vice President Wubah. "It has been a goal of the administration to increase the number of students who [have access to] research experiences. That has been successful, but support of the scieneering program will take us to the next level."

Research leads to purr-fect publicity

Discovering the actual mechanics a cat uses to lap up fluids has potential applications in medicine and bioengineering, but the announcement of that discovery in fall 2010 also demonstrated the public interest a piece of unique research can generate.

"How cats lap: Water uptake by *Felis catus*," by Sunghwan "Sunny" Jung, assistant professor of engineering science and mechanics at Virginia Tech; Pedro Reis and Roman Stocker at the Massachusetts Institute of Technology; and Princeton University's Jeffrey M. Aristoff, was published in the magazine Science, but the news quickly circled the globe and videos proliferated on the Internet.

While a dog noisily scoops water into its mouth with its tongue by penetrating the liquid surface, the cat elegantly darts its tongue out, and the tip of the upper side only rests on the surface of the liquid. The tongue is then pulled upward at high speed, drawing a column of water behind it. Thus, a cat is able to exploit fluid inertia to defeat gravity and pull liquid into its mouth. Just at the moment that gravity finally overcomes the rush of the water and starts to pull the column down, the cat closes its mouth and swallows. The cat laps four times a second—too fast for the human eye to see anything but a blur—and its tongue moves at a speed of one meter per second.

The engineers first used high-speed photography and then tested their findings using a machine that was originally built for the International Space Station. They discovered that cats automatically lap at just the right speed to get the maximum amount of water, and that they also instinctively adjust the speed based on their own weight.

Jung now wants to collaborate with other Tech engineers to look into the lapping traits of dogs.

Mastering public health

The university also launched a master of public health program to help the country and the greater Appalachian region deal with a critical shortage of trained public health professionals. The program, which offers concentrations in public health education and infectious disease, integrates and significantly expands public health opportunities at the university.

To complement that program, the board of visitors also approved establishing the Department of Population Health Sciences within the Virginia-Maryland Regional College of Veterinary Medicine, which is collaborating with the Virginia Tech Carilion School of Medicine on the program. The department organizes and administers the public health program and engages in research and outreach initiatives related to human and animal health.

"Working together with colleagues from across the university and from the new medical school, we have put in place a cohesive program that will provide the advanced skills and expertise necessary to join the public health workforce," said Dr. Gerhardt Schurig, dean of the veterinary college and a member of the Virginia Tech Carilion School of Medicine board of directors. "Physicians, veterinarians, and other health professionals must work together more closely than ever in order to protect public health."

"The [master of public health] program draws the medical school and the university closer together through collaboration with physicians who specialize in infectious disease or have [public heath]degrees themselves," said Dr. Cynda Ann Johnson, dean of the school of medicine.

The program is also expected to generate a number of instructional, research, and outreach partnerships between Virginia Tech and health organizations and agencies.

Planning for the arts

As mentioned earlier, another academic focus for Tech is the arts because of its importance in educating the whole person. The university took a huge stride in stressing the importance of that concept when President Steger presented the Strategic Plan for the Arts to the board of visitors. "We owe students more than a preparation for life at work," Steger said. "We owe students the opportunity and means to educate themselves beyond work and after work."

"The arts engage and inspire all of us; they are an essential part of the academic program at Virginia Tech," said Mark McNamee, senior vice president and provost. "The strategic plan for the arts brings more than new buildings; its impact will add value for all of our academic units and all of our students."

Reaching out for the future

While every great institution of higher education must make its home base a welcoming place of excellence, it must also seek to serve the larger community. As a land-grant university, Virginia Tech has always made vital academic, cultural, and economic contributions to its many constituencies. Today, it stands ready to further enhance the quality of life for the surrounding region, the commonwealth, the nation, and the world. Aggressive outreach initiatives will strengthen Tech's leading role in the transfer of knowledge and expertise from the university to society.

One major way the university serves the larger populace is through programs that provide economic development, jobs, or expertise and training that will help revitalize a community. This past year brims with examples.

Tech established the National Tire Research Center (NTRC), an advanced tire research and test facility that will create up to 183 new jobs in Southside Virginia. The facility is a partnership between the Virginia Tech Transportation Institute, General Motors Co., the Tech Department of Mechanical Engineering, the Institute for Advanced Learning and Research, and the Virginia Tobacco Indemnification and Community Relations Revitalization Commission. Funding totaled $14 million.

The NTRC will generate more than $12 million in testing and research within five years and offer substantial new research and teaching opportunities for Virginia Tech faculty. The center will be located adjacent to Virginia International Raceway in Halifax County, Va.

"We are very proud that Virginia Tech can play a significant role in this innovative public-private partnership," said President Charles W. Steger. "We believe that this

national research center will enhance and expand areas of automotive research and create tremendous economic activity in Southside Virginia. It will also develop new products that can save energy and improve the safety of motorists around the world."

Wine and broccoli

Other university-community outreach projects will attempt to bolster the wine and broccoli industries.

The U.S. Department of Agriculture's (USDA) National Institute of Food and Agriculture (NIFA) awarded $3.8 million to researchers in the College of Agriculture and Life Sciences to lead a multi-state, multi-university effort to further improve grape and wine quality in the eastern United States. According to Tony Wolf, professor of viticulture and project director, the effort seeks to encourage industry adoption of grape and wine production practices that integrate research-based recommendations with key market drivers to achieve a robust grape and wine industry in the region.

"In order to increase wine sales in the eastern United States, including Virginia, wine grapes and wines must be of consistently high quality, and they must be produced on a cost-competitive basis," said Wolf. Virginia currently ranks fifth nationally in wine grape production, and its grape and wine industry has a total economic impact of more than $362 million per year.

The Center for Geospatial Information Technology will even be involved by allowing users to access a Web-based interactive geographic information system that lets them evaluate their property for vineyard suitability and match the property's location to appropriate grape varieties.

Compared to the wine industry, broccoli isn't a major player in the Virginia agriculture scene, but Virginia Cooperative Extension agent Wythe Morris hopes to change that. Morris is part of a team of industry and academic re-

searchers who have launched an effort to develop a $100 million broccoli industry on the East Coast over the next 10 years by building grower networks in several production areas. The model for those networks is in Virginia's Carroll and Patrick counties.

"As much as 90 percent of broccoli sold in the East is shipped from California and Mexico," Morris said. "Establishing an eastern industry could reduce fuel costs, cut carbon dioxide emissions from cross-country trucks, and save water in the western United States."

The effort is backed by a $3.2 million grant from the USDA, with an additional $1.7 million in matching contributions from participating companies. The team, led by Cornell University, includes Virginia Tech, six other universities, and 11 companies.

Yet another grant, this one for $1.67 million from the U.S. Department of Commerce, will provide the kind of technical assistance that allows companies in the Southwest Virginia transportation cluster to grow and create jobs. In addition, College of Engineering faculty members will guide the region's 8,000-worker-strong industry in the integration of green technology into plants and products. Volvo, which provided a $175,000 contribution toward the project, has been a leader in introducing green technology.

Science exploration

In a more academic effort, Tech and the Science Museum of Western Virginia formed a partnership to expand and enhance community-based science education. University faculty and students will collaborate with staff from the downtown Roanoke museum to reinvent the museum as a living laboratory for informal science education. The collaboration will include the development of programs and events that stimulate curiosity and encourage exploration.

"This strategic partnership will enable both organizations to better serve the community," said Sam English, chair of the museum's board of trustees. "The Science Museum of Western Virginia has a 40-year history of engaging children in scientific exploration and serves as a resource for teachers, schools, and families throughout western Virginia. The addition of Virginia Tech's talent and expertise and will build upon that foundation."

"Virginia Tech sees this partnership as a new way to reach out to the community," said McNamee, Tech's provost. "It will allow us to showcase the university's exciting research locally and, by working with the museum, to inspire future generations to pursue careers in science, technology, engineering, and mathematics."

Excellence in the classroom and laboratory

Virginia Tech prides itself in its faculty members and researchers renowned for their nationally and internationally recognized teaching, exploration, and service. Sometimes those exceptional abilities are feted either by the university or by outside agencies. The following are just a sampling of the university's educators who won acclaim in 2010-11.

Two become distinguished professors

Laundry detergent bubbles started Roe-Hoan Yoon on a productive 35-plus-year career of researching clean coal technology. During a mid-1960s high school chemistry class in Yoon's native South Korea, a teacher used chalkboard drawings to explain how detergents remove dirt from clothes. Yoon was hooked. "A teenager's fascination still lives in me," he says.

Thirty-one years after joining the mining and minerals engineering department, the Virginia Tech Board of Visitors named Yoon a University Distinguished Professor "for the significant contributions he has made to the science and technology of mineral processing."

Yoon's research funding has generated more than $40 million for the university. He has helped shepherd more than 55 students to their graduate degrees. He is a member of the National Academy of Engineering and has been honored multiple times by the Society for Mining, Metallurgy, and Exploration.

Yoon also serves as director of the Center for Advanced Separation Technologies, a consortium of universities that develops technologies to produce clean solid, liquid,

and gaseous fuels from domestic energy resources in an efficient and environmentally acceptable manner. In 1980, Yoon and a research team developed a technology that uses small air bubbles to produce clean coal from the coal particles fines discarded in waste ponds. Yoon's basic concept has since become widely used in the flotation industry around the globe. Now, Yoon has moved on to developing still more ways to make the most of discarded water-soaked ultrafine coal, a process that might recover 1 billion tons of untapped coal sludge.

Tom Gardner, of the Department of English, was named an Alumni Distinguished Professor. A faculty member since 1982, Gardner has consistently earned rave reviews from his students. A common theme in course evaluations is that he does much more than cover a body of material. "He teaches students to read and think about poetry as they never have before," noted Carolyn Rude, professor and chair of the English department.

One student wrote, "His class taught me a new way of thinking. I feel I now have the patience to struggle through complex problems, break things down, and be able to walk away with an understanding."

Gardner's own scholarship teaches students how to use poetry in thinking about world issues. He was asked to write the entry on "Close Reading" for the new Princeton "Encyclopedia of Poetry and Poetics," which he refers to as "the so-called 'Bible' of my field."

Besides his acclaimed critical writings, Gardner is a poet as well as a playwright. He has won various awards in his academic career, including the Virginia Outstanding Faculty Award, a Guggenheim Fellowship, and a National Endowment for the Arts fellowship in poetry. He has also garnered multiple university awards for teaching.

State recognizes Downey, Batra with top awards

Gary Downey, Alumni Distinguished Professor of Science and Technology in Society, was honored with the Virginia Outstanding Faculty Award, and Romesh C. Batra, professor of engineering science and mechanics, received the Virginia Outstanding Scientist Award. Both awards are bestowed by the State Council of Higher Education for Virginia (SCHEV).

Recognized internationally as founding leader of a unique interdisciplinary field called engineering studies, Downey is also an affiliated professor in engineering education, women's and gender studies, and sociology.

"Downey has bridged a daunting gap in higher education between engineering and the liberal arts," said Ellsworth

Fuhrman, chair of the Department of Science and Technology in Society. Downey's research led him to develop the award-winning course, Engineering Cultures.

Batra, who holds Virginia Tech's Clifton C. Garvin Professorship, is world-renowned for his work on the strength of materials. His efforts have earned him numerous awards, including the prestigious Alexander von Humboldt Award in 1992 for his pioneering work in developing an understanding of the failure of materials due to extreme loads. In 2010, he received the SCHEV Virginia Outstanding Faculty Award.

Working with his students, Batra has assisted in developing numerous new designs and products. For example, he has led teams in the improved design of different types of armors, such as bulletproof vests, tank walls, and shields to protect vehicles against an improvised explosive device blast. He has also studied micro-electro-mechanical systems that open up air bags in a car crash and smart materials that monitor their own vibrations.

Three earn CAREER awards

Alexander Leonessa, assistant professor of mechanical engineering in the College of Engineering, won a $480,000 National Science Foundation (NSF) Faculty Early Career Development (CAREER) award to seek a way to help those who are unable to speak. Leonessa is developing a small device that could apply functional electrical stimulation to the paralyzed vocal folds of stroke patients or others who have lost the ability to talk, and maybe even help those who can't swallow and breathe properly.

Jason Holliday, assistant professor of forest genetics and biotechnology in the College of Natural Resources and Environment, is using his $1.5 million CAREER grant to gain insight into how tree populations adapt at the genomic scale as a result of climate change. The genomic analysis will be used to help understand climatic adaptation in two related species that are widespread in the United States—trembling aspen and eastern cottonwood, which are expected to be important feedstocks for the production of ethanol from woody biomass.

The NSF also named Rafael Davalos, of the Virginia Tech–Wake Forest School of Biomedical Engineering, as one of its 2011 CAREER recipients. He and his collaborators will use his $450,000 award to continue his trailblazing research on the ability of irreversible electroporation to treat cancer with and without chemotherapeutic agents or radiation. Davalos will look specifically at whether irreversible electroporation procedures can be adapted for the destruction of special tumors called *glioblastoma multiforme*, the most common and aggressive type of primary brain tumor in humans.

Fred Lee, an internationally recognized leader in the field of power electronics, was one of 68 new members elected to the National Academy of Engineering for 2011. For some three decades, Lee's work has led to a paradigm shift in the manufacturing of power electronics products, including computers and telecommunications, and motor drives for heat pumps, air conditioners, and other industrial and commercial applications.

Over the years, Lee has pioneered lecture and laboratory courses to support power electronics while supervising a total of 80 master's level and 69 Ph.D. students. Since 1977, total funding secured by Lee exceeds $87 million.

Thomas R. Fox, professor of forestry in the College of Natural Resources and Environment, was awarded a Fulbright scholarship for research and teaching at the Pontificia Universidad Catolica de Chile in Santiago, Chile. Fox worked with colleagues at the Chilean university's Center for Climate Change on a research project to compare carbon dynamics and carbon sequestration in tree plantations and native forests in Chile.

Janine Hiller, professor of business law in the Pamplin College of Business, also received a Fulbright Scholar grant and the Fulbright-Lund Distinguished Chair of International Public Law. She spent fall 2010 in Sweden at Lund University's Raoul Wallenberg Institute of International Human Rights Law. There, she participated in undergraduate programs and faculty and graduate-student seminars while comparing Swedish, European Union, and U.S. approaches to balancing patient privacy and health rights in the area of electronic health record systems.

Judy S. Riffle, professor of chemistry and director of Tech's interdisciplinary macromolecular science and engineering Ph.D. education program, was named a Fellow of the American Chemical Society. Riffle was one of only three distinguished scientists in the state to be honored in the organization's second class of Fellows.

The American Society of Mechanical Engineers named Srinath Ekkad, an associate professor of mechanical engineering in the College of Engineering, as a Fellow. Ekkad also serves as a director of the Center for Clean Coal Energy, part of Virginia Tech's Institute for Critical Technology and Applied Science.

Paul Ruszler, Extension poultry specialist emeritus, and Assistant Professor Rami Dalloul, both of the Department of Animal and Poultry Sciences in the College of Agriculture and Life Sciences, were honored by the Poultry Science Association (PSA). Ruszler was elected a PSA Fellow, the highest honor that the association bestows. Dalloul received the PSA Early Achievement Award for Research.

Michael J. Mortimer of Alexandria, Va., director of graduate programs for the College of Natural Resources and Environment in the National Capital Region, was elected a Fellow of the Society of American Foresters. While teaching graduate courses, Mortimer has responsibility for more than 145 master's students and more than 25 adjunct faculty members.

Marion Ehrich, professor of pharmacology and toxicology at the Virginia-Maryland Regional College of Veterinary Medicine, was awarded the prestigious Pfizer Award for Research Excellence. Ehrich, who serves as co-director of the Laboratory for Neurotoxicity Studies at the college, is a pioneer in the use of in-vitro systems for mechanistic studies and safety assessment in neurotoxicology.

Cameron Craddock, a postdoctoral researcher with the Virginia Tech Carilion Research Institute, received a prestigious Young Investigator grant from the NARSAD Brain and Behavior Research Fund. Craddock's research focus for the award is unipolar depression. He works with neuroscientists Stephen LaConte and Pearl Chiu, both new faculty members at the institute. "These NARSAD awards are highly competitive nationally and we are extremely proud of Dr. Craddock for his work and recognition in this important area of research for a major area of public health," said Michael Friedlander, executive director of the institute.

Helena Carvalho, assistant professor at the Virginia Tech Carilion School of Medicine, recently received the 2011 Young Investigator Award from the Teaching Section of the American Physiological Society. "Helena has made a positive impact in our learning environments—from giving lectures to serving as a facilitator during small group sessions," said Dr. Cynda Ann Johnson, founding dean of the medical school. Carvalho also taught younger students at Kids' Tech University, a program developed at the Virginia Bioinformatics Institute in partnership with Virginia Cooperative Extension's 4-H Youth Development Program.

The late Hassan Aref, professor of engineering science and mechanics, received the G.I. Taylor Medal from the Society of Engineering Science, an award last given in 2003. The medal recognizes Aref's outstanding research contributions in fluid mechanics.

Wu Feng, associate professor of computer science and electrical and computer engineering, was named to HPCWire magazine's "People to Watch List" for 2011. The list, comprised of individuals who are influential in the high-performance computing community, also included Feng in 2004.

Virginia Tech English Professor Ed Falco wrote a prequel to Mario Puzo's "The Godfather." Slated for publication in June 2012, "The Family Corleone," is based on an unproduced screenplay by Puzo and set in New York in 1933 before the Corleones' rise to power.

The International Union of Forest Research Organizations (IUFRO) honored Professor Janaki R.R. Alavalapati, head of the Department of Forest Resources and Environmental Conservation, with the 2010 IUFRO Scientific Achievement Award.

Management Professor Richard Wokutch and marketing Professor Joseph Sirgy in the Pamplin College of Business are among the most productive researchers in business ethics, according to a study in the Journal of Business Ethics that ranked Virginia Tech 15th among the top 25 academic institutions in this field.

Students rise to the top

Challenging academic standards attract special students who produce outstanding results. Here's a sample of the students who were recognized for various accomplishments in 2010-11.

Charles "Casey" Baker, a junior honors student triple majoring in physics, biological sciences, and mathematics in the College of Science, was awarded a Barry M. Goldwater scholarship for the 2011-12 year. He was one of 275 scholars selected from a field of more than 1,000 science, engineering, and math students nominated from colleges and universities across the country. Baker's area of specialization is computational biophysics. He has a 3.94 grade point average (on a 4.0 scale) and will earn almost twice the required number of credits before graduating in spring 2012.

Baker's career goal is to earn a Ph.D. in biophysics, conduct research in theoretical biophysics, and become a university professor.

Kara Dodson, a junior environmental resources management major in the College of Natural Resources and Environment (CNRE), received a 2011 Udall Scholarship from the Morris K. Udall and Stewart L. Udall Foundation. Dodson is president of the Virginia Tech Environmental Coalition and a student representative on the University Energy and Sustainability Committee. She began her educational career at Virginia Tech as a civil engineering major concentrating on water sanitation and distribution before switching to environmental resources management. Dodson was one of 80 students from 61 colleges and universities, and the only one from Virginia, to receive the Udall

Scholarship. "The Udall is one of the prestigious national awards and a major accomplishment by Kara," said Paul Winistorfer, CNRE dean.

Five Virginia Tech students were selected to be 2010-11 Atlantic Coast Conference (ACC) Undergraduate Research Scholars. The ACC Undergraduate Research Scholarship program, coordinated by Tech's Division of Undergraduate Education, recognizes highly talented undergraduate students who are pursuing ambitious and unique research projects. The 2010-11 ACC Undergraduate Research Scholars were Charles Baker, Ritesh KC, Bryan Murray, Ryan Prest, and Sarah Webster.

A group of doctoral students in the Virginia Tech College of Engineering's computer science department and Center for Human-Computer Interaction won first place in the 3D UI Grand Prize competition at the 2011 Institute of Electrical and Electronics Engineers Symposium on 3-D user interfaces, held in Singapore. With a video they prepared for the contest, the team—known as the Fighting Gobblers—earned their second consecutive first-place win. This year's team included Felipe Bacim, Bireswar Laha, and Cheryl Stinson.

Four students from Haiti got the chance to pursue computer science graduate degrees at Virginia Tech thanks to Google, the Web search engine company. Sherley Codio, Fabrice Marcelin, Jennifer François, and Mario Calixte came to Virginia Tech in April 2008 through a partnership between the Office of International Research, Education, and Development, the Department of Computer Science, and the Ecole Supérieure d'Infotronique d'Haïti (ESIH) in Port-au-Prince to strengthen the school's computer science program. All students were in the United States at the time of the Jan. 12, 2010, earthquake, two of them on a service project to help build homes in communities along the Gulf Coast affected by Hurricane Katrina. One ESIH professor and 13 students were killed in the earthquake, and the ESIH building was destroyed. After completing a master's degree, the students expect to return to Haiti.

Aerospace engineering majors Josh Eggleston, Kristopher Walbert, Eric Buckenmeyer, Umair Surani, Andrew Lyford, and Katie Rybacki won first place in the 2010 American Institute of Aerospace and Aeronautics (AIAA) Team Space Transportation Design Competition for coming up with a reliable and cost-effective system to send a minimum of two astronauts to a near-Earth asteroid and return them safely to the planet.

Three students from the Virginia-Maryland Regional College of Veterinary Medicine clicked, buzzed, and answered their way to victory in the American Association of Bovine Practitioners (AABP) national quiz bowl competition in Albuquerque, N.M. Sarah Brauning, Anne Dewar, and Jenny Miller defeated representatives from 23 other veterinary colleges in the day-long event. The competition, the first of its kind held by the AABP, was part of the association's annual conference.

Melanie C. Kiernan, a senior majoring in communication in the College of Liberal Arts and Human Sciences, received the North Carolina Campus Compact's fifth Community Impact Student Award. Kiernan was one of 34 college students who received the award for making significant, innovative contributions to their campuses' efforts to address local community needs. Kiernan was recognized for her leadership nationally in service activities. She is chair of the executive board for the Campus Coalition of YMCAs in addition to being a Youth Service America Youth Council member.

Rebecca French, who completed her Ph.D. in geosciences, was awarded a Congressional Science Fellowship by the American Geophysical Union (AGU). The fellowship program places highly qualified, accomplished scientists, engineers, and other professionals in the offices of either an individual member of Congress or on the staff of a congressional committee for a one-year assignment.

The North American Colleges and Teachers of Agriculture (NACTA) recognized Allison C. Echols, a master's degree student in the Department of Animal and Poultry Sciences, with the 2011 Graduate Student Teaching Award. The NACTA Graduate Student Teaching Award recognizes and rewards graduate students who excel as teachers in the agricultural disciplines.

Innovative kitchen designs by three Virginia Tech apparel, housing, and resource management students landed them in the top 10 out of 401 college and university competitors in the National Kitchen and Bath Association/General Electric (NKBA/GE) Charette Competition. Based on the students' design drawings, faculty from the Department of Apparel, Housing, and Resource Management chose Katelyn Shipe, Kevin Fields, and Alexandra Van Nuys to represent Tech at the competition. Shipe, a senior, won second place and a $4,000 scholarship. Van Nuys, also a senior, and Fields, a junior, were each in the top 10 and received $1,000 scholarships.

Four alumni recognized for service to the university

Alumni and friends are integral to Virginia Tech's future, so the university annually recognizes a handful who have made a difference.

John W. Bates III (business administration '63), of Richmond, Va., who comes from a family of Hokies, received the 2011 William H. Ruffner Medal, Tech's highest honor.

Bates was a class officer, a member of the commandant's staff in the Virginia Tech Corps of Cadets, and a member of the Alpha Phi Omega service fraternity. After earning a law degree in 1966 from the University of Virginia, he launched an accomplished legal career that lasted 43 years, culminating with being named managing partner of Richmond-based McGuire Woods LLP.

Bates has been recognized as a Fellow in the Virginia Bar Foundation and received the Richmond Bar Association's Hill Tucker Award for public service. At Tech, he has served on the Virginia Tech Foundation Board of Directors, is co-chair of the Richmond Regional Campaign Committee within The Campaign for Virginia Tech: Invent the Future, and also is on the university's National Campaign Steering Committee.

Alumna Betty P. Chao, the founder, president, and chief executive officer of Westech International Inc., is the 2011 recipient of Virginia Tech's University Distinguished Achievement Award.

Chao, of Albuquerque, N.M., established Westech in 1994 as a one-person consulting business focused on providing technical services to government and commercial clients. Today, her fast-growing company has annual revenue of $30 million and employs 300 people across 14 states.

A native of Taiwan, Chao moved with her family to the U.S. when she was in the third grade. She earned bachelor's and master's degrees from the University of Michigan before entering the industrial and systems engineering Ph.D. program at Tech.

Among the many awards bestowed on Chao or Westech are the New Mexico Ethics in Business Award for Ethical Entrepreneurship in 2011; the U.S. Small Business Administration's Administrator Award of Excellence in 2010, 2004, and 2000; and the U.S. Department of Commerce's Regional Technology Firm of the Year award in 2001.

Virginia State Senator John C. Watkins and University of North Carolina Professor of Medicine Sidney C. Smith Jr. received the 2011 Alumni Distinguished Service Award.

Watkins '69, of Midlothian, Va., has served in the Virginia State Senate since 1998, and previously served 16 years in the Virginia House of Delegates. He also chairs the board of Watkins Nurseries Inc., a family business founded by his great-grandfather in 1876.

Watkins chairs the state Commission on Unemployment Compensation, the Virginia-North Carolina High-Speed Rail Compact Commission, and the Virginia Geographic Information Network Advisory Board. He served two six-year terms on the Virginia Tech Alumni Association Board of Directors and is a founding member and past-president of the College of Agriculture and Life Sciences Alumni Organization.

Smith, of Chapel Hill, N.C., is a professor of medicine at the University of North Carolina and has broad interests in the treatment and prevention of cardiovascular disease. He is president of the World Heart Federation, and has been involved with the American Heart Association for the past three decades.

Smith earned a bachelor of science degree in chemical engineering from Tech in 1963 and a medical degree from Yale University in 1967. He has maintained a strong commitment to Virginia Tech, and currently serves on the board of directors at the Virginia Tech Carilion School of Medicine.

Over the years, Smith has also served on the board of directors of the Virginia Tech Alumni Association, the Biological Systems Engineering Advisory Board, and the Chemical Engineering Advisory Board.

Smith received the 1996 University Distinguished Achievement Award and was inducted into Virginia Tech's Academy of Engineering Excellence in 2004.

Rankings

U.S. News & World Report

Undergraduate

Virginia Tech ranked 27th among national public universities. Among all national universities, Tech ranked 69th.

The Virginia Tech College of Engineering undergraduate program ranked 13th in the nation among all accredited engineering schools that offer doctorates. It was seventh among engineering schools at public universities. Nine of the college's undergraduate engineering programs were ranked among the top 20 of their peer programs.

The Pamplin College of Business undergraduate program

ranked 42nd among the nation's undergraduate business programs and 10th among public institutions.

Graduate

The College of Engineering's overall graduate program ranked 24th among all schools of engineering. Six departments within the college finished in the top 15 of their respective categories.

The career and technical education graduate program in the College of Liberal Arts and Human Sciences' School of Education tied for fourth among vocational and technical specialties for the third year in a row.

The public affairs program in the School of Public and International Affairs, College of Architecture and Urban Studies, ranked 27th in the nation.

Two programs within the College of Science were rated among the best in the nation. In the geosciences department, the paleontology program ranked ninth and the earth sciences program ranked 28th.

The Pamplin College of Business ranked 45th among the nation's best part-time M.B.A. schools.

Other rankings

The undergraduate programs in architecture and landscape architecture, both in the School of Architecture + Design, ranked No. 4 and No. 3, respectively, in the America's Best Architecture & Design Schools study conducted by the journal DesignIntelligence. The school's programs in interior design and industrial design also ranked in the study's top 10 in their respective fields.

DesignIntelligence also ranked the graduate landscape architecture program fourth in North America, the graduate interior design program No. 10, and the graduate architecture program No. 12.

The Wall Street Journal ranked Virginia Tech 13th in the nation among colleges favored by employers looking for workers. The College of Engineering and its computer science department each ranked fifth in the survey.

Kiplinger's Personal Finance magazine ranked Tech 24th among 100 public institutions "that combine outstanding economic value with a first-class education."

Online college admissions resource Parents & Colleges, which provides information to help guide families through the college admissions process, ranked Tech third in the category of "Top 10 Best College Eats."

Sustaining the future

In addressing development of the university's next long-range strategic plan, President Charles W. Steger told the Virginia Tech community, "Sustainability must become part of our culture." But the president also pointed out that "green" activities often require large investments of capital, so the long-range plan must help guide those investments for years to come.

In the meantime, the university continued to reduce its environmental footprint and to research ways to help others do the same. Those efforts have produced results, according to the Sustainable Endowments Institute's College Sustainability Report Card 2011, which gave the university a B+. Tech's overall grade has improved each year since the university first participated in the survey in 2008. The Sustainable Endowments Institute is a nonprofit organization engaged in research and education to advance sustainability in campus operations and endowment practices.

As further recognition of excellence in the transportation category, Tech received a gold award for the second year in a row in the Best Workplaces for Commuters (BWC) Race to Excellence. And Tech was named a Governor's Environmental Excellence Award winner for implementation of its sustainability plan.

The university's commitment to sustainability earned it inclusion in the "The Princeton Review's Guide to 311 Green Colleges: 2011 Edition," compiled in conjunction with the U.S. Green Building Council. Keys to the recognition included Tech's Climate Action Commitment and Sustainability Plan and the integration of sustainable programs into the academic curriculum and research initiatives.

In the residence halls, residents and employees can breathe a little easier because their buildings are cleaned with responsible processes and systems, using only sustainable products that are free from harsh chemicals. Tech is the first university to receive the CleanZone Level III Certification from JanPak Inc., the leading supplier of distinctive and responsible cleaning and packaging.

Sustainability has moved into the dining halls, where students can eat meals made with local and organic meats and vegetables seven days a week during the fall and spring semesters at the Farms & Fields Project food stall in Owens. Other on-campus venues occasionally serve local products, including vegetables raised at Tech's Kentland Farm and an increasing amount of beef, pork and lamb raised by researchers and students in Tech's College of Agriculture and Life Sciences.

Environmental and sustainability research is under way across campus. Just a few examples include:

- The U.S. Department of Agriculture's National Institute of Food and Agriculture awarded Tech a five-year, $2.7 million grant to study integrated management of zoosporic pathogens and irrigation water quality to create a more sustainable nursery and floriculture industry. In particular, the project will search for biologically based control methods for damaging pathogens and develop best-management practices to safely recycle irrigation water in order to protect water quality and improve water-use efficiency.

- The Interdisciplinary Center for Applied Mathematics is a partner in the $122 million U.S. Department of Energy's Energy Innovation Hub to develop technologies to make buildings more energy-efficient. The project is led by Pennsylvania State University.

- A team of engineers received a three-year, $1.5 million award from the National Science Foundation (NSF) and the U.S. Department of Energy to investigate specific ways to reduce emissions from vehicles and to improve fuel economy. To reach their goals, researchers hope to develop new thermoelectric materials, which are able to directly convert heat into electricity. Undergraduate and graduate students will also be involved in the research.

- Amy Pruden, an NSF Faculty Early Career Development award recipient and an assistant professor of civil and environmental engineering, is working to more easily differentiate between human and animal sources of antibiotic resistance genes to shed light on areas where intervention can be most effective in help-

ing to reduce the spread of these contaminants through environmental matrixes. The World Health Organization and the federal Centers for Disease Control and Prevention recognize antibiotic resistance "as a critical health challenge of our time."

Preserving the past for the future

After years of being vacant and an ensuing $1 million restoration, Solitude, the oldest building on campus and a part of the original Virginia Agricultural and Mechanical College (today's Virginia Tech), is once again serving the university.

"As a land-grant university, part of our mission is to engage with the region," said Sue Ott Rowlands, dean of the College of Liberal Arts and Human Sciences. "Solitude represents our ability to connect to the past, to families that originally settled this area, and to families that currently are still living and working here."

The building's front parlor on the ground floor will be outfitted with reproductions of historical furniture, and the rest of the first floor will be decorated with appropriate furnishings. One exhibit room contains materials from the Earl Palmer Appalachian Photograph and Artifact Collection and a piece of furniture that was in the house before it was sold to the college by Col. Robert Preston. The Appalachian Studies Program occupies the second floor.

Built more than 200 years ago, the house was initially a frontier-style log cabin, but has been expanded several times. Preston sold the house and 250 acres to the college in 1872. Since then, the building has served as an infirmary, faculty housing, a clubhouse for returning World War II veterans who lived in trailers surrounding the building, and an academic building.

Solitude is listed on the National Register of Historic Places and is a Virginia Historic Landmark. Much of the restoration project was funded by the Mary Morton Parsons Foundation of Richmond, Va.
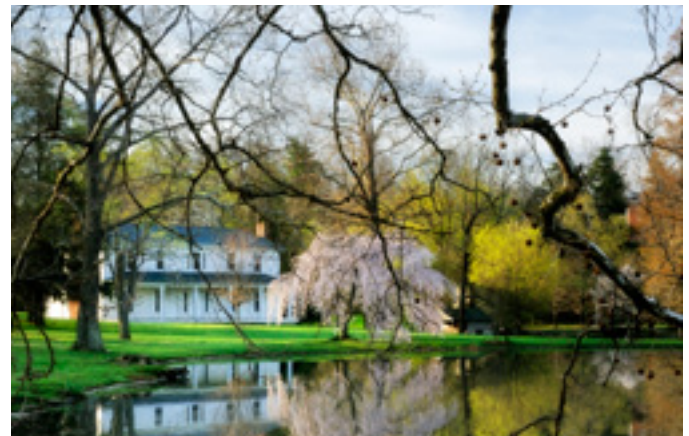
Solitude

The year in giving

Contributors gave more than $92.2 million to Virginia Tech in fiscal year 2011, an increase of nearly 13 percent over the previous year and a single-year fundraising record for the university.

The end of the fiscal year also marked the successful conclusion of The Campaign for Virginia Tech: Invent the Future, an eight-year effort that generated more than $1.11 billion. That result not only surpassed the $1 billion campaign goal, but it was more than three times greater than the amount raised in the university's last comparable campaign.

Other milestones for University Development in fiscal year 2011 include the largest donation in Virginia Tech history and receipt of the largest bequest ever realized by the university. Both of those extraordinary examples of generosity were directed to the College of Engineering.

Of the more than 42,000 contributors to support the university during the fiscal year, nearly 6,800 were first-time donors.

The amount donated to the university by alumni increased by nearly 47 percent, and the university's Office of Annual Giving raised nearly $3.5 million, which was its second-highest total ever.

Several units realized particularly large increases compared to the previous year, including the College of Agriculture and Life Sciences (nearly 56 percent), the College of Engineering (115 percent), and the Virginia Tech Corps of Cadets (nearly 66 percent).

Endowed giving nearly doubled. In yet another first, the value of the university's endowment, managed by the Virginia Tech Foundation, topped $600 million—due to both gifts and the income from investments.

02	03	04	05	06	07	08	09	10	11 *
$12,375	$12,523	$13,962	$15,310	$16,447	$18,972	$18,216	$15,130	$16,646	$19,619
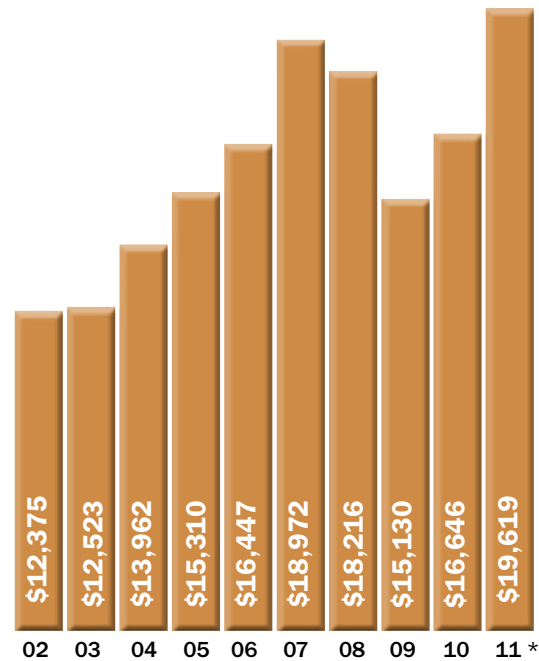
Endowment Per Full-Time Student

02	03	04	05	06	07	08	09	10	11 *
$9,429	$7,689	$7,119	$7,765	$8,108	$8,487	$7,975	$8,005	$6,859	$6,709
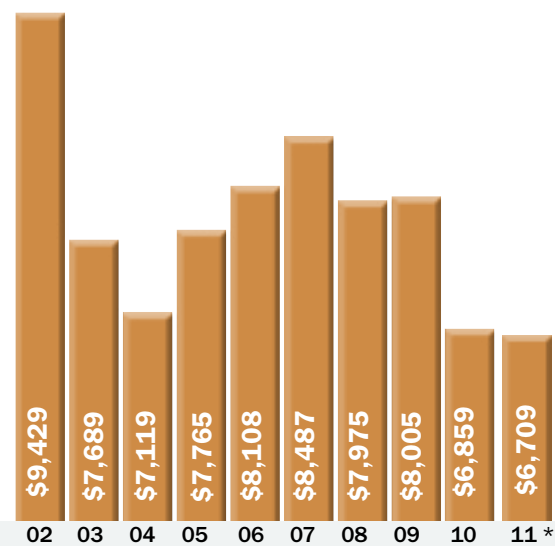
State Funding Per Full-Time In-state Student

NOTE: Figures in the state funding chart for all years will differ slightly from numbers in annual reports before 2008-09 because past figures have reflected a method that used fall registration to calculate the full-time equivalent headcount. The numbers in this year's report instead reflect an annualized head count. Figures are not adjusted for inflation.

Source: Virginia Tech Office of Budget and Financial Planning

*Fiscal years

University Highlights

Student Admissions		2006-07	2007-08	2008-09	2009-10	2010-11
	TOTAL APPLICATIONS RECEIVED (INCLUDES TRANSFERS)					
	Undergraduate	21,570	22,126	23,351	23,781	22,942
	Graduate	6,878	7,462	8,457	9,397	9,190
	OFFERS AS A PERCENTAGE OF APPLICATIONS					
	Undergraduate (freshmen only)	65.6	65.4	64.0	65.3	65.1
	Graduate	40.6	38.0	37.3	34.1	33.4
	NEW ENROLLMENT AS A PERCENTAGE OF OFFERS					
	Undergraduate (freshmen only)	41.8	42.0	43.1	38.5	41.6
	Graduate	65.2	67.7	62.9	63.6	60.9
Total Student Enrollment (head count)	ENROLLMENT BY CLASSIFICATION					
	Undergraduate	21,997	23,041	23,567	23,558	23,690
	Graduate and first professional	6,473	6,857	7,172	7,312	7,316
	ENROLLMENT BY CAMPUS					
	Blacksburg campus	26,371	27,572	28,259	28,432	28,687
	Northern Virginia Center	1,013	1,073	1,107	1,077	1,078
	Other off-campus locations	1,086	1,253	1,373	1,361	1,241
	ENROLLMENT BY RESIDENCE					
	Virginia	19,817	20,917	21,337	21,557	21,475
	Other states	6,654	6,811	7,168	7,047	7,198
	Other countries	1,999	2,170	2,234	2,266	2,333
	DEGREES CONFERRED					
	Undergraduate	4,887	5,050	5,308	5,523	5,705
	Graduate and first professional	1,807	1,954	1,940	2,038	2,045
Faculty and Staff	Full-time instructional faculty	1,340	1,371	1,369	1,364	1,306
	Other faculty and research associates	1,649	1,690	1,761	1,913	1,826
	Part-time, temporary faculty (P14 faculty)	233	217	229	224	273
	Support staff	3,698	3,774	3,816	3,603	3,461
	Total faculty and support staff	6,920	7,052	7,175	7,104	6,866
	Percent of instructional faculty tenured	65.3	63.4	61.9	62.8	61.9

University Financial Highlights

For the years ended June 30, 2007 - 2011 (all dollars are in millions; square feet in thousands)

Revenues, Expenses, and Changes in Net Assets (1)		2006-07	2007-08	2008-09	2009-10	2010-11
	Operating revenues	$ 592.7	$ 633.7	$ 684.5	$ 715.1	$ 782.2
	Operating expenses	883.8	945.6	970.1	967.3	1,025.5
	Operating loss (2)	$ (291.1)	$ (311.9)	$ (285.6)	$ (252.2)	$ (243.3)
	Non-operating revenues and expenses (2)	317.1	326.7	299.0	291.8	322.7
	Other revenues, expenses, gains, or losses	122.3	25.2	46.1	90.1	48.8
	Net increase (decrease) in net assets	$ 148.3	$ 40.0	$ 59.5	$ 129.7	$ 128.2
University Net Assets (1)	Invested in capital assets, net of related debt	$ 568.9	$ 622.9	$ 669.7	$ 734.9	$ 794.6
	Restricted	$ 159.4	$ 118.9	$ 113.1	$ 135.3	$ 137.0
	Unrestricted	$ 91.7	$ 117.7	$ 136.2	$ 178.5	$ 245.3
Assets and Facilities	Total university assets (1)	$ 1,298.8	$ 1,339.3	$ 1,429.5	$ 1,654.0	$ 1,844.3
	Capital assets, net of accumulated depreciation (1)	$ 814.5	$ 871.5	$ 972.2	$ 1,095.5	$ 1,196.6
	Facilities-owned gross square feet	8,498	8,551	8,946	9,011	9,166
	Facilities-leased square feet	682	684	858	863	913
Sponsored Programs	Number of awards received	2,131	2,263	2,384	2,516	2,400
	Value of awards received	$ 203.1	$ 227.6	$ 232.3	$ 312.4	$ 274.0
	Research expenditures reported to NSF (3)	$ 367.0	$ 373.3	$ 396.7	$ 398.2	N/A
Virginia Tech Foundation	Gifts and bequests received	$ 78.5	$ 91.6	$ 65.1	$ 86.9	$ 98.5
	Expended in support of the university	$ 107.3	$ 127.1	$ 124.8	$ 126.5	$ 124.4
	Total assets and managed funds	$ 940.9	$ 925.6	$ 942.1	$ 1,023.6	$ 1,155.1
Endowments (At Market Value)	Owned by Virginia Tech Foundation (VTF)	$ 469.4	$ 475.5	$ 410.7	$ 452.7	$ 541.0
	Owned by Virginia Tech	47.8	45.1	35.6	44.4	52.7
	Managed by VTF under agency agreements	7.9	7.4	5.8	6.0	7.0
	Total endowments supporting the university	$ 525.1	$ 528.0	$ 452.1	$ 503.1	$ 600.7
Student Financial Aid (4)	STUDENTS RECEIVING SELECTED TYPES OF FINANCIAL AID					
	Loans	11,072	11,382	12,085	12,896	13,133
	Grants, scholarships, and waivers (5)	17,028	17,635	18,406	27,134	27,469
	Employment opportunities	8,260	8,836	8,734	8,514	9,007
	TOTAL AMOUNTS BY MAJOR CATEGORY					
	Loans	$ 102.2	$ 106.1	$ 128.0	$ 139.9	$ 147.0
	Grants, scholarships, and waivers	101.5	119.2	134.2	155.7	174.2
	Employment opportunities	55.0	60.2	62.0	63.4	69.5
	Total Financial Aid	$ 258.7	$ 285.5	$ 324.2	$ 359.0	$ 390.7

(1) The university adopted the new Governmental Accounting Standard Board (GASB) reporting model in fiscal year 2002 as required by GASB Statement Number 35, Basic Financial Statement—and Management's Discussion and Analysis—for Public Colleges and Universities.

(2) The university will always be expected to show an operating loss since significant recurring revenues are shown as non-operating. Major revenue sources reported as non-operating include state appropriations, gifts, and investment income. These revenue sources are used for general operations in support of the learning, discovery, and engagement missions of the university.

(3) Total research expenditures reported to the National Science Foundation were not available at publication date.

(4) Amounts for fiscal years 2007, 2008 and 2009 reflect any applicable restatements.

(5) Grants, scholarships and waivers for FY2010 include undergraduate Virginia residents who received ARRA tuition mitigation grants.

TIMELINE

JULY

Engineers establish NASA competition 'dynasty'

Ten undergraduate aerospace engineering students take the top prize in a NASA aeronautics competition for college students to develop a multipurpose amphibious aircraft designed to rescue up to 50 survivors following a natural disaster. Virginia Tech students have a strong history of winning NASA aircraft design competitions, placing first in 2008 and winning the American Institute of Aeronautics and Astronautics student competition in 2009.

Conference center namesake passes away

Associate Professor Emerita Margaret Groseclose "Peggy" Skelton, a faculty member for more than 20 years and a dedicated and generous supporter, dies at age 79. Skelton directed the Virginia Cooperative Extension (VCE) Family Resource Program and was known at Tech for her many contributions as a volunteer and philanthropist. The university's conference center is named for her and her late husband, William E. Skelton, dean emeritus of VCE.

University photographer sweeps competitions

Jim Stroup, of the Office of University Relations, is named photographer of the year by the University Photographers' Association of America. Stroup also wins the Nikon Shoot Out Competition and the Monthly Image Competition Award, making him the first photographer ever to win all three major awards in one year.

Tree that witnessed VAMC founding comes down

After many years of heroic preservation efforts, the large sycamore tree on Henderson lawn, which can be seen in 1872 photos of the Preston and Olin Building, succumbs to old age and must be cut down. Faculty members take cuttings to propagate future saplings and wood from the old tree is saved for future use.

AUGUST
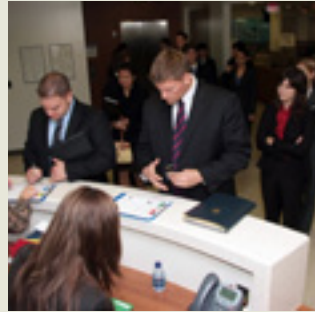
Medical school classes start

Studies start for the first class of students at the Virginia Tech Carilion School of Medicine and Research Institute in Roanoke, Va. Utilizing an innovative patient-centered curriculum, the school addresses the increasing need for research-competent physicians who can utilize discoveries at the bedside and in the community.

African-American trailblazer dies

Charlie L. Yates (mechanical engineering '58), the first African-American graduate of Virginia Tech and later a member of the College of Engineering faculty for 17 years, dies at age 74. In 1958, media reports said he was the first African American "to be graduated from any major Southern engineering institute." Yates earned a master's degree from Cal Tech in 1959 and a Ph.D. from Johns Hopkins in 1978, eventually returning to Tech in 1979. Yates also served a term on the Virginia Tech Board of Visitors.

Work for blind is recognized yet again

National Instruments awards its 2010 Application of the Year recognition to the Virginia Tech Blind Driver Challenge, a project designed to one day allow blind people to independently drive automobiles. The project is a collaborative effort between the Virginia Tech College of Engineering and the National Federation of the Blind, partnering with TORC Technologies. The project also won National Instruments' 2010 Graphical System Design Achievement Award, Robotics Division.

Graduate program addresses health shortage

Virginia Tech launches a master of public health program as the United States and, in particular, Southwest Virginia and the greater Appalachian region face a critical shortage of trained public health professionals. The program is administered through the new population health sciences department in the Virginia-Maryland Regional College of Veterinary Medicine and was developed in collaboration with the Virginia Tech Carilion School of Medicine.

Parking deck a first on campus

Virginia Tech opens its first-ever parking deck, a five-story affair with 1,300 spaces. The Perry Street Parking Deck, which was begun in August 2009, is open with large spaces to allow natural ventilation of vehicle fumes and to decrease the amount of time interior lights need to be on.

New diversity leader is chosen

William T. Lewis Sr., director of the Office of Institutional Diversity at Bridgewater State College in Massachusetts, is named vice president for the Office for Diversity and Inclusion at Tech. Lewis will collaborate with the campus, alumni, local, and global communities to ensure that Virginia Tech continues to be an inclusive community that nurtures learning and growth for all of its constituencies. Lewis earned his doctorate from Indiana University.

Board focuses on health science research

The Virginia Tech Board of Visitors approves a new Health Science Division that will support increased collaborative efforts between the university and Carilion Clinic. The expanded partnership will further support Virginia Tech's growing research foundation focused on the life sciences, which, President Charles W. Steger tells the board, the university must accelerate to meet or exceed the strategic plan's target of $540 million in research funding by 2011-12.

SEPTEMBER

Exemplary departments emphasize international education

The Department of Entomology in the College of Agriculture and Life Sciences and the departments of Chemical Engineering and Mechanical Engineering in the College of Engineering are recognized with the 2010 University Exemplary Department Award. Presented annually since 1994, the awards recognize departments and programs that develop and sustain innovative and effective approaches to fostering international awareness and education.

Diversity organization gains Virginia chapter

Virginia Tech, a charter member of the National Association of Diversity Officers in Higher Education, is instrumental in gaining approval for a provisional affiliate association chapter, the Virginia Diversity Officers in Higher Education (VDOHE). The Virginia chapter will provide Virginia-based chief diversity officers a chance to exchange ideas to increase inclusive excellence in higher education. VDOHE's members include James Madison University,

University of Virginia, Virginia Commonwealth University, George Mason University, George Washington University, and Tech.
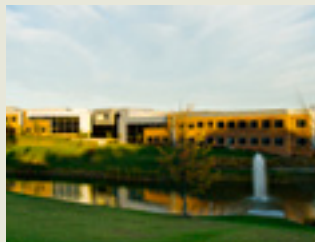
CRC top in the nation

The Virginia Tech Corporate Research Center (CRC) is named the 2010 Outstanding Research Park by the Association of University Research Parks. The award recognizes parks that excel in guiding technology from the laboratory into economically viable business activities.

Significant gift supports ICTAS

American Electric Power honors former executive vice president Joseph H. Vipperman (electrical engineering '62) with a $1 million gift to the Institute for Critical Technology and Applied Science (ICTAS) to support work in sustainable energy and clean coal technology. Vipperman was a key member of the alumni task force that helped to develop the concept and plan for ICTAS.

OCTOBER

Research ranking rises

Virginia Tech is ranked 44th in the nation out of 697 academic institutions in fiscal year 2009 (the most recent ranking available), according to the National Science Foundation. The university reported $398 million in expenditures for the year ending June 30, 2010, compared to just $268.8 million in 2004.

Long-time commandant of cadets retires

Maj. Gen. Jerrold P. Allen, the longest-serving commandant in the history of the Virginia Tech Corps of Cadets, announces he will retire in July 2011. During Allen's 12-year

tenure, corps enrollment grew significantly to its highest total since the 1960s. Allen markedly shaped the corps' leadership program by overseeing the establishment of a leadership minor and for-credit leadership courses. He also fostered an environment that demanded academic success, emphasized service to the community, and produced ROTC detachments recognized as some of the best in the nation in their respective services.

Grant focuses on STEM education

Virginia Tech and several partners will use a three-year, $17.2 million grant from the U.S. Army to study ways to entice schoolchildren to develop interest in science, technology, engineering, and mathematics (STEM) and to train teachers. Training teachers and fostering public-school education in STEM is part of the university's strategic plan; the STEM effort is aimed at solving a projected shortfall in scientists and engineers, both at the U.S. Department of Defense and throughout the nation.

Police gain additional accreditation

The Virginia Tech Police Department earns International Association of Campus Law Enforcement Administrators (IACLEA) accreditation. While the department has received four consecutive re-accreditations from the Commission on Accreditation for Law Enforcement Agencies Incorporated in the past, IACLEA requires departments to demonstrate and document nine additional standards that focus specifically on four campus enforcement and safety issues: annual campus security report, emergency access and response, physical security, and personal safety.

NOVEMBER

Architecture archive founder dies

Milka Tcherneva Bliznakov, professor emerita of architecture and a trailblazer for

women in architecture, dies at age 83. A native of Varna, Bulgaria, Bliznakov joined the architecture faculty at Tech in 1974. Frustrated by the lack of primary research materials on women architects, she founded the International Archive of Women in Architecture at Tech in 1985. It continues to collect and archive the professional papers of women architects, landscape architects, designers, architectural historians and critics, and urban planners, as well as the records of women's architectural organizations.

Patent portfolio garners ranking

Virginia Tech ranks 10th among universities globally in the Institute of Electrical and Electronics Engineers Spectrum Patent Power Scorecards, which analyze the strength of patent portfolios for calendar year 2009.

ICTAS center gains standing

The Institute for Critical Technology and Applied Science's Center for Energy Harvesting Materials and Systems receives an award from the National Science Foundation to create and support an Industry/University Cooperative Research Center. Such centers conduct high-quality, industrially relevant, fundamental research, emphasizing strong industrial collaboration and aiding the transition of intellectual property from universities to industry.

University works to improve student learning

Virginia Tech is one of 70 colleges and universities to join the New Leadership Alliance for Student Learning and Accountability, a national initiative to improve student

learning on campuses across the United States. Tech was invited to join the alliance because of the university's ongoing work in assessing, reporting on, and improving student learning.

DECEMBER

Relay for Life tops in the nation

The student-run Virginia Tech 2009-10 Relay For Life receives the Gordy Klatt award for the second year in a row, achieving the top net income among colleges nationally. The event, which raises $582,194, also wins awards for top college in participation per capita, top online event for raising $417,428, and greatest number of survivors present, with 136 in attendance. Later in the year, the 2010-11 event surpasses the 2009-10 one by raising more than $600,000.

Tech officials disagree with federal ruling

Virginia Tech administrators disagree with a U.S. Department of Education ruling that university actions on the morning of April 16, 2007, are in violation of The Clery Act, a federal law that requires a "timely warning" to a campus community upon knowledge of certain crimes committed on the campus. Administrators say they believe they acted in concert with DOE guidelines and actions of other universities when faced with similar circumstances. Tech eventually decides to appeal the ruling, in part because the university was unable to challenge the evidence before the ruling.

JANUARY

Once again, university in top 25 for value

Virginia Tech is again ranked among the top public colleges and universities in the nation for offering a high-quality education at an affordable price, according to Kiplinger's Personal Finance magazine. The Kiplinger "100: Best Val-

ues in Public Colleges" lists the university 24th. Since 2006, Kiplinger's has ranked Virginia Tech among the top 25 public universities for value.

Walters takes over libraries
Tyler Walters, associate dean for technology and resource services at the Library and Information Center at Georgia Tech, is named dean of University Libraries at Virginia Tech. Walters succeeds Eileen Hitchingham. Walters has received grants from the National Endowment for the Arts, National Endowment for the Humanities, the Library of Congress, the National Archives and Records Administration, and the Institute of Museum and Library Services.

Fine arts gains recognition
Poets & Writers Magazine ranks Virginia Tech's master of fine arts program, which is just six years old, 35th among 527 such programs nationally, putting it in the top 7 percent. In addition, the program is ranked No. 10 in poetry. The rankings are based on 16 categories, including poetry, fiction, and nonfiction, as well as annual and total funding, selectivity, teaching loads, cost of living, and postgraduate placement.

Batra is named outstanding scientist
Romesh C. Batra, professor of engineering science and mechanics, wins a 2011 Virginia Outstanding Scientist Award from the State Council of Higher Education for Virginia. Batra is Tech's Clifton C. Garvin Professor and is world-renowned for his work on the strength of materials.

Top state honor goes to Downey
The State Council of Higher Education for Virginia awards Gary Downey, Alumni Distinguished Professor of Science and Technology in Society, its Virginia Outstanding Faculty Award,

Virginia's highest honor for faculty.

Fighting Gravity performs for campus fundraiser
After tour appearances around the country, performing group Fighting Gravity, made up of 13 Virginia Tech students, returns to campus to raise money for the university's Relay For Life. The Pi Kappa Alpha fraternity members got their start at a campus talent competition and went on to finish third on NBC's nationally broadcast television show, "America's Got Talent."

Service project honors those lost
As the university prepares for its 2011 Day of Remembrance, Virginia Tech asks students, faculty, staff, parents, alumni, and friends to pledge 32 hours of community service in honor of the 32 lives lost on April 16, 2007. Toward that end, the student planning committee for the event creates the "32 for 32" service project initiative to run during the 2010-11 academic year.

University earns second-straight commuter award
Virginia Tech wins a gold award for the second year in a row for its alternative transportation programs in the Best Workplaces for Commuters Race to Excellence. Tech's award recognizes the university's support for new Smart Way buses, the hybrid and articulated Blacksburg Transit buses, a significant increase in carpool participation, and the online Virginia Tech Ride Board.

Extension welcomes new leader
Edwin J. Jones, associate director and state program leader for agriculture, natural resources, and community and rural development at North Carolina Cooperative Extension and professor of forestry and environmental resources at North Carolina State University, takes over as director of Virginia Cooperative Extension. Jones is nationally recognized for his knowledge and expertise in natural disaster education and has received numerous awards during his career. Jones earned his doctorate and master's degrees in fisheries and wildlife sciences from Virginia Tech.

Graduate engineering rises in rankings
The College of Engineering continues to climb higher among the nation's best engineering schools for graduate studies, according to U.S. News & World Report. The latest survey ranks the college 24th, one place ahead of its 2011 ranking. The Pamplin College of Business master of business administration (M.B.A.) program ranks 45th among the nation's best part-time M.B.A. schools. Numerous other graduate programs also are recognized.

Task force starts work on strategic plan
President Charles W. Steger charges a task force overseen by Paul Knox of the Office of Long Range Planning to develop a "Plan for a New Horizon" for Virginia Tech for 2012-18. This new strategic plan will focus on the key economic and environmental factors that will likely have a significant impact on the future of Virginia Tech and develop a series of scenarios that outline a "New Horizon" for the university. Throughout the process, the task force will conduct a series of town hall meetings and forums to solicit input and guidance from members of the university community.

Cadets conduct Pylon ceremony for comrade
The Virginia Tech Corps of Cadets conducts a Pylon Dedication Ceremony to honor U.S. Navy Lt. j.g. Zachary R. Eckhart (aerospace engineering '08), who was killed April 12, 2010, in the crash of his T-39 training aircraft in Georgia. He was 25. Eckhart was a member of the regimental band and the Highty-Tighties, and served as the Third Battalion academics officer for the spring semester of his senior year.

Top ACC undergraduate researchers present projects
Seven Virginia Tech undergraduate students present their research projects at the sixth annual Atlantic Coast Conference (ACC) Meeting of the Minds undergraduate research conference at the University of Miami. The conference is an opportunity for ACC universities to highlight the diversity of undergraduate research work and for students to share that work with peers.
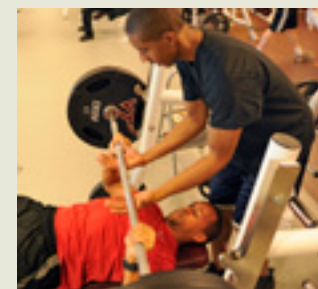
McComas recreation renovation tops in nation
The renovation and expansion of McComas Hall is selected as a 2011 National Intramural-Recreational Sports Association Outstanding Sports Facilities Award winner. The winners are considered a standard by which other collegiate recreational facilities should be measured. McComas Hall opened to students in 1998 with 61,000 square feet of recreation space, but as a result of its ever-increasing popularity, was expanded by 26,000 square feet. Additions include 140 new pieces of cardio

equipment and 70 pieces of strength-training equipment.

Solitude reopens after long vacancy

The university celebrates the restoration and reopening of its oldest structure, Solitude, part of which was built in 1801. Solitude had been vacant for many years prior to the $1 million restoration funded primarily by the Mary Morton Parsons Foundation of Richmond, Va.

APRIL

Campus is recognized for environmental excellence

Virginia Tech is one of 20 winners of the 2011 Governor's Environmental Excellence Awards. The university receives a gold award for implementation of its sustainability plan through the Green Campus Challenge, which encouraged administrative units to adopt policies and behaviors to conserve and reduce energy, water, materials, and transportation.

New commandant prepares to take reins

Maj. Gen. Randal D. Fullhart, a veteran of more than 32 years in the U.S. Air Force, is chosen to take over as commandant of the Virginia Tech Corps of Cadets when Maj. Gen. Jerrold Allen retires. Fullhart has served as the director of Global Reach Programs in the Office of the Assistant Secretary of the Air Force for Acquisition; deputy chief of the Central Security Service, National Security Agency; commandant of the Air Command and Staff College;

and commander of the College of Aerospace Doctrine, Research, and Education.

Tuition increase necessary to maintain excellence

The Virginia Tech Board of Visitors Executive Committee raises tuition and fees for the 2011-12 academic year to ensure continued availability of courses and address escalating utility costs and the operation and maintenance of new facilities. President Steger expresses his appreciation that the General Assembly and governor return some of the state funding cuts for 2011-12, but notes that revenue from the commonwealth remains far below that of 10 years ago even as the university continues to accept more students. The university plans to again increase university funds for need-based financial aid, raising this total to approximately $13.1 million.

Steger unveils record gifts

An anonymous benefactor commits $25 million toward the Signature Engineering Building, the largest single donation ever given to Virginia Tech. In addition, President Charles W. Steger announces a $3 million gift in support of the project from the Quillen family of Southwest Virginia and realization of $17 million from an estate gift in support of the mechanical and chemical engineering departments, both of which will have space in the building. Steger also notes a $100,000 donation from the Student Engineers' Council, an extraordinary contribution for a student organization.

CNRE renames fish and wildlife department

To reflect a growing emphasis on sustainability, the Department of Fisheries and Wildlife Sciences changes its name to the Department of Fish and Wildlife Conservation. The new name is one of a number of steps the College of Natural Resources and Environment takes to position itself as a leader in the area of sustainability.

MAY

Ag sciences spending ranks fifth

Virginia Tech ranks fifth for research spending in the agricultural sciences in 2009, according to the National Science Foundation (NSF). NSF defines agricultural sciences as including agricultural production, aquaculture, international agriculture, soil sciences, natural resources and conservation, landscape architecture, agricultural chemistry, agronomy, animal science, fish and wildlife, forestry, and horticulture. Tech's research expenditures of $91.6 million in this area accounted for more than 23 percent of the research spending at the university in fiscal year 2009.

WFTF radio garners recognition

WVTF Public Radio / RADIO IQ claims three first-place awards from the Radio Television Digital News Association's 2011 Regional Edward R. Murrow Awards program. In addition, the station receives a 2010 Sigma Delta Chi Award for excellence in journalism from the Society of Professional Journalists (SPJ). The winners were chosen from more than 1,400 entries.

JUNE

Civil War historian gains emeritus status

James I. Robertson Jr., Alumni Distinguished Professor of History in the College of Liberal Arts and Human Sciences, is conferred the Alumni Distinguished Professor Emeritus title by the Virginia Tech Board of Visitors. It is estimated that more than 22,000 Virginia Tech students took a Civil War history course from Robertson during his 44-year career. Robertson is also founding executive director of the Virginia Center for Civil War Studies.

Vet Med establishes fourth department

The board of visitors gives approval to a Department of

Population Health Sciences within the Virginia-Maryland Regional College of Veterinary Medicine. The department, the college's fourth, will organize and administer the public health program and engages in research and outreach initiatives related to human and animal health.

Former BOV rector Dekker dies

Henry Dekker, of Blacksburg, Va., former rector of the Virginia Tech Board of Visitors and long-time supporter of the university, passes away. He was 90. Dekker was a member of the Class of 1944 but graduated in 1947 from the Pamplin College of Business with a degree in advanced accounting after three years of military service during World War II. At Tech, Dekker was president of the Class of 1944 for three years and was also president of the Corps of Cadets. Dekker was a longtime member of the Pamplin Advisory Council, was the class ring collection namesake for the Class of 1998, helped lead the campaign to revitalize the corps in the 1990s, served on the board of visitors from 1989 to 1997, and received the William Henry Ruffner Medal in 1999.

Northern Virginia research facility opens

The university expands it capability for new scientific inquiry and extends its accessibility in the National Capital Region with the opening of the Virginia Tech Research Center—Arlington. The location offers great opportunity for partnerships with corporate research entities and the 144,000-square-foot facility is among the best-connected research facilities in the world.

VirginiaTech

Invent the Future