Four faculty members received the title of “distinguished professor,” which recognizes outstanding professors for exceptional instruction, research, and service as demonstrated by evaluation of teaching, research support, graduate student supervision, refereed journal publication, professional society activities, and service to the University community. The recipients are: Soundar Kumara, industrial and manufacturing engineering; Arthur Miller, civil and environmental engineering; Asok Ray, mechanical engineering; and Vigor Yang, mechanical engineering.

Mary Frecker, associate professor of mechanical engineering, received the 2002 Freudenstein/General Motors Young Investigator Award from the American Society of Mechanical Engineers’ Mechanisms Committee.

Dennis Hiltunen, associate professor of civil and environmental engineering, was named national president of the Chi Epsilon civil engineering honor society.

Mary Jane Irwin, distinguished professor of computer science and engineering, was named a member of the National Academy of Engineering (NAE). Election to the NAE is considered the highest professional honor an engineer can attain.

Bruce Logan, Kappe Professor of Environmental Engineering, was named a member of the National Science Foundation Advisory Committee for Environmental Research and Education.

David Duarte, doctoral graduate in computer science and engineering; Vijay Narayanan, assistant professor of computer science and engineering; and Mary Jane Irwin, distinguished professor of computer science and engineering, are the recipients of the 2003 Institute of Electrical and Electronics Engineers Circuits and Systems Society VLSI Transactions Best Paper Award for the paper, “A Clock Power Model to Evaluate Impact of Architectural and Technology Optimizations.”

Robert Santoro, distinguished professor of mechanical engineering and director of the Propulsion Engineering Research Center, was named the George L. Guillet Professor in Mechanical Engineering. The Guillet Professorship was established by Penn State alumni William P. and Marilyn Guillet Ott. The endowment honors George Guillet, former Penn State professor of mechanical engineering from 1924 to 1944.

Andrew Scanlon, professor and head of civil and environmental engineering, was named a Fellow of the American Society of Civil Engineers (ASCE).
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About the Cover and Editor’s Note
Traditionally, Engineering Penn State’s cover story focuses on the innovations in research here in the College. For this issue, we’ve decided to examine some of the innovative things our faculty are doing in the classroom and how tomorrow’s engineers are being trained today. This issue also features a special section devoted to Penn State’s historic Grand Destiny capital campaign and its effects on the future of the College of Engineering.
Evolving engineering education

Penn State engineering students are entering the workforce better prepared than ever.

Mary Frecker, right, associate professor of mechanical engineering, discusses a student's capstone design project at the Learning Factory Project Showcase.
Foreword

For almost a decade now, the College has been striving to prepare its students to be “World-Class Engineers,” a concept developed with the Leonhard Center for the Enhancement of Engineering Education’s advisory board. Our goal continues to be producing graduates who are aware of the world, technically broad, solidly grounded, effective in group operations, versatile, and customer oriented.

Surveys of our recent graduates underscore these attributes’ importance. There is the reality that our alumni pursue a variety of occupations with their engineering training and degrees, such as business, management, and consulting activities.

The faculty challenge then is to fuse these professional skills with technical knowledge and proficiency taught to students. The stories that follow illustrate some of the new strategies and programs introduced to address these needs.

As we look ahead, the College is already focusing on the Engineering Curriculum 2010. Issues we’re examining include:

- How can we utilize advanced virtual and immersive environments to achieve more effective and efficient learning?
- How can we expand collaborative and practice-based learning opportunities?
- What form will the classrooms and laboratories of the future take?
- How can we re-engineer the curriculum via creative courses and class formats to strengthen the professional content while preserving the emphasis on core competencies?

As we march to 2010, once thing is certain—the College will continue to improve and evolve to form the next generation of World-Class Engineers.

— Robert N. Pangborn, associate dean of undergraduate studies
More than a century has passed since Penn State President George Atherton established the School of Engineering. Though the engineering school started with a mere three departments, it already exhibited many of the hallmarks of today’s College of Engineering.

A third of all students attending the Pennsylvania State College in 1895-96 enrolled in engineering, and the young school occupied Penn State’s largest and most expensive building at the time.

Today, it is still one of the University’s largest colleges, with an enrollment of more than 5,800 undergraduates at the University Park campus. The College’s dozen departments and programs occupy all or parts of 43 buildings on campus.

And like their peers of a century ago, the College’s students receive one of the most advanced engineering educations available.

Beyond the semester

Traditionally, college students are required to follow a menu of prescribed courses each semester in order to meet their degree program requirements.

Faculty members in the Harold and Inge Marcus Department of Industrial and Manufacturing Engineering are changing that tradition by creating courses that take more than one semester to finish.

Dubbed “IME, Inc.,” the curriculum integrates design, manufacturing, and production, explains Richard Koubek, head of the department. “It’s really one course that takes three semesters to get through,” he says.

College officials say the multi-semester format may be adopted for other disciplines.

Koubek says IME, Inc. evolved from the department’s desire to find a better way to teach students manufacturing in a real-world setting.

“We wanted to be more efficient in how we deliver our curriculum,” he states. “Traditionally, a student learning manufacturing progresses from course to course. The problem is, when you get to the next class, you repeat a lot of the previous class. Also, there was a false assumption that students learned how the courses connected together after it was all said and done.”

The solution was to implement a multiple-semester course that students could take in three parts. This, Koubek says, takes manufacturing education to another level.

Students in traditional manufacturing courses learn about product design and prototyping, but not the actual manufacturing process. He explains that IME, Inc. forces students to consider how their designs might be mass produced.

The engineering students are asked to generate an idea for a manufactured product with market potential. The product—usually some type of Penn State-related memorabilia—goes from the design phase to the prototyping phase to the manufacturing phase.

“It was as if you’re running a small business,” observes Julia Frumkin (ME ’03), who went through part of the course last spring.
Frumkin and her group designed a miniature version of the metal-working lathe found in the Leonhard Building's lobby. She says they thought their product might be used as a trophy for or a momento of the industrial engineering department.

Of course, some things are easier said than done.

“The students are told they have to make quantities greater than just one,” Koubek says. The department head says it is relatively easy for a student team to build one prototype, but when asked to consider the cost and manufacture of a hundred, the students often find themselves returning to the drawing board.

Timothy Simpson, associate professor of industrial and mechanical engineering, recalls a project that needed a bit of scaling down.

“We had a replica of Old Main that was $400 in materials, so the students had to figure out how to cut costs,” he says. “Instead of creating the building out of solid aluminum like they originally planned, they crafted it in smaller pieces and cut costs to about $120.”

In addition to learning how to manufacture an item in mass quantities, the students get a hard lesson in quality control on the manufacturing line.

“To get a product to the point where we can sell it, it’s got to look good,” Simpson says. Many of the lessons learned in IME, Inc. are similar to concepts taught in the interdisciplinary Product Realization minor, of which Simpson is the director.

Koubek believes the College is uniquely qualified to offer this level of hands-on training because of its state-of-the-art Factory for Advanced Manufacturing Education Laboratory.

Photo Credit: Gene Maylock
Even as today’s students receive some of the most advanced engineering training available, the College’s educators are already thinking about innovations to help teach tomorrow’s students.

According to Robert Pangborn, associate dean of undergraduate studies, future changes will be driven by two questions. “It boils down to ‘How will students be learning and what will they be learning?’” he explains.

One possibility Pangborn foresees is an evolution in how students “attend” a class. “With the increasing use of wireless technology, the traditional day in class might eventually disappear,” he says. Rather than attend a course that meets every Tuesday and Thursday in a specific classroom, future students might simply log in from their campus locations for class and spend time with instructors mainly in conjunction with problem solving and project work.

The notion of a semester may also change, Pangborn says. Instead of shoehorning course materials into a 16-week-semester format, professors might teach a topic using a more efficient strategy of phases throughout a student’s academic career. “The idea that you’re locked into a six-period day in a 16-week semester might be foreign to students ten years from now,” Pangborn states. “Course material may be more effectively delivered in concentrated four- or six-week modules, while other courses may last a full year or more.”

Other technologies will also continue to evolve engineering education. “I think there will be an increased use of virtual laboratories,” he says. Advanced technologies will enable students to collect data remotely and allow research to be conducted utilizing simulations, for example.

The use of commercial products to teach engineering students will remain an integral part of the curriculum, Pangborn believes. Today’s companies are demanding that the graduates they hire are trained in statistical packages and computer-aided drafting programs.

Some things, however, will remain the same. Like today’s Penn State engineering students, future generations will still have to complete a comprehensive general education requirement. “This is a trademark of a Penn State education,” Pangborn states. “I think what makes us different from other schools is the broad general education in the arts, humanities, social sciences, and communications our students get.”

Pangborn argues that the general education requirement rounds out an engineer’s knowledge, giving the graduate an aesthetic and global context to engineering. General education adds depth to the understanding of ethics and social issues, which they are also seeing increasingly integrated into their technical education.

As for engineering itself, Pangborn says, “There are those who will argue that the way we teach may be different, but the basic principles behind the education won’t change very much.”

— Curtis Chan
Manufacturing Education (FAME) Laboratory, located in the Leonhard Building. The FAME Lab uses the same equipment found in manufacturing plants around the country, which allows Penn State students to easily transition from college to their first jobs.

Teaching students on the equipment their prospective employers use makes complete sense, Simpson says. “Doctors train at clinics and journalists train at student newspapers. If we’re producing manufacturing engineers, they should have worked on a manufacturing line,” he states.

When the students graduate, Simpson says, “They’ll hit the ground running and won’t need any extra time to train on the company’s machinery.”

Frumkin agrees. The mechanical engineering graduate now works for Bally Design, a product design consulting firm in Pittsburgh.

“Before I took the class, I wasn’t sure what I wanted to do in engineering after I graduated,” she says. “It taught me a lot about product design, and as it turns out, paved the way for my current job.”

Minors make a major difference

For many college students, a minor rounds out their baccalaureate degree. Traditionally, few engineering students took on a minor, preferring to focus their energies on their chosen discipline.

That, however, is rapidly changing as more young people are rounding out their educations with a minor. Two popular choices in the College are the engineering leadership development minor and the engineering entrepreneurship minor.

Launched in 1995, the leadership development minor was envisioned as a non-technical, professional supplement to the engineering instruction students received. As its name implies, the minor focuses on cultivating students’ leadership abilities through study and practice, as well as teamwork skills.

“IT’s spread like wildfire among the students,” says Donald Horner, the minor’s director. “We haven’t advertised it at all. It’s all word of mouth.”

That’s exactly how industrial engineering junior Christina Jaschuk found out about the program.

“I had some friends who took it and said they really liked it,” she says.

Jaschuk says she plans to use the leadership minor’s lessons in her extracurricular activities, including the Phi Sigma Rho engineering sorority and the Society of Women Engineers, where she will hold a leadership position this year.
Leadership opportunities are also available through Engineering Leadership Development Unlimited. “It’s a student organization that essentially serves as a leadership laboratory,” Horner explains. “It provides them with the chance to directly apply course material in an interactive, hands-on, meaningful way.

The leadership minor has grown in popularity since its debut, mushrooming from 20 students enrolled in spring 1998 to 145 in spring 2003.

“The reason why we’ve grown so much is because we’ve got a quality product that our customers—our students and the people who hire our students—have told us is good,” Horner says. “In fact, to see that our graduating students are getting multiple offers in a tight job market tells us we’re on target.”

Students looking to expand their repertoire can also choose the College’s entrepreneurship minor.

Liz Kisenwether, director of the minor, says the program augments students’ engineering skills by giving them some business savvy.

Courses in the minor include minimal lecturing, as students spend most of their time trying to solve problems introduced by instructors.

At the end of the semester, the young entrepreneurs devise a product and marketing plan as their final project. The work doesn’t end there, however.

Kisenwether says the teams are given ten minutes to “sell” their products in an “elevator pitch” session to a group of real-life entrepreneurs, who judge the competition. The session takes place at the same time as the Learning Factory’s annual Project Showcase.

“The elevator pitch is as if you stepped in an elevator with an executive and had only the time until you got to the top floor to sell your idea,” Kisenwether explains.

Ideas students pitched this year include wireless headphones for joggers and walkers, an ultra-secure ID card for personal medical records, an attachment to a scuba mask that prevents fogging, and a device that measures and reports the amount of exposure to ultraviolet rays.
The student teams were judged on their overall product, creativity and innovation, and presentation.

Kisenwether says teams who show the most promise are elevated to “stage 2,” where faculty members assist them in producing and marketing their product.

One such team formed a company called Diamondback Automotive Accessories. Run by Matt Chvrechko (ME ’03) and civil engineering senior Ethan Wendle, the new firm specializes in custom tonneau covers for pickup trucks.

Diamondback’s key product is an ultra-strong cover made of diamond plating.

The product idea came when Chvrechko purchased a pickup truck and wanted a cover for his cargo area. Not satisfied with the available fiberglass and hard plastic covers on the market, the young engineer fashioned his own out of diamond plating.

Since then, the two have refined the original design to incorporate removable panels and a drainage system for water, among other things.

Wendle says their product has distinct advantages over their fiberglass and hard plastic competitors. He states the diamond plating is more secure from theft. Users can also store objects on top of the diamond plating, thereby increasing the pickup’s cargo capacity. In fact, Wendle says the diamond plating is engineered to carry an additional 1,000 lbs. on top while maintaining the cargo volume below.

The two are targeting automotive dealerships to sell their product. Wendle explains that most automotive accessories are purchased when a vehicle is sold.

“One of the keys to the business is getting it to the new truck buyers,” he says. The cost of the Diamondback is slightly more expensive than the $600 to $800 it costs for fiberglass or hard plastic tonneau covers, but Wendle believes buyers will be willing to spend the extra dollars to get a stronger, more durable product for their new trucks.

Wendle admits, however, that he never really thought about going into business when he first came to Penn State.

“I came to school as an engineering student, and I thought I would maybe return to school at some point to get my MBA,” he recalls. “But now it seems to me that the engineer would make the best businessperson, since both people have to solve problems.”

Job experience? No problem

Each fall, thousands of students flood the Bryce Jordan Center, not for a major rock concert, but for the University’s annual Career Fair.

The event allows students to search for everything from full-time positions to internships and co-ops.

Rick McClintic, director of the Engineering Co-op and Internship Program, says one of the greatest advantages of a university the size of Penn State is that it offers prospective employers “one-stop shopping” for their personnel needs.

McClintic’s office places students in internships, which are semester-long academic work experiences, and co-ops, which are full-time work experiences during a student’s last two years of school.

“The program allowed me to work both in the office and on site projects and locations I otherwise would never have seen,” says Shehab Barakat, a chemical engineering student. “It’s helped me affirm my choice of engineering major, and it’s helped me prepare for the working world. I think I’ve got a greater edge than most graduating students with no real-world work experience.”

According to McClintic, the College places 600 to 800 engineering students in 700 to 1,000 co-ops and internships each year.
The program spans 32 states and eight foreign countries. McClintic says that although the economic downturn has forced companies to recruit fewer students, Penn State continues to fare better than other universities.

“A lot of schools are struggling with the economy. Things have flattened out,” he states. “We have that problem, but not nearly as bad as other schools. Even last year, when things were down, we had more than 350 companies attend the career fair.

Penn State has been able to weather the economic adversity because of two groups, according to McClintic.

First there are the alumni, McClintic says. “One of the wonderful things about this program is the extensive network of very enthusiastic alumni that always keep in touch with us,” he says.

Then there are the companies, the director states. He says firms such as NASA, Sikorsky Aircraft, Ingersoll-Rand, Johnson & Johnson, Intel, and IBM have remained actively committed to the program.

But ultimately, the success of the co-op and internship program boils down to the students.

“Penn State students are pretty adventurous—they’re willing to reach for opportunities,” McClintic observes. “Our students aren’t afraid to ask questions and get their hands dirty. They always leave a positive impression on companies.”

An evolutionary process

Even as today’s students progress through one of the most advanced engineering curriculums available, faculty members are working on numerous ways to improve the Penn State engineering educational experience.

Tom Litzinger, director of the Leonhard Center for the Enhancement of Engineering Education, is leading a major effort for curricular innovation and reform in many departments, including industrial, mechanical, civil, and chemical engineering.

In many ways, industrial engineering’s IME, Inc. is a prototype of what the College is trying to accomplish, he says.

Closer to reality is the infusion of ethics in many courses. Litzinger has been organizing workshops for faculty to teach them how to integrate ethics in their own courses.

Teaching ethics to young engineers is vital to their careers, Litzinger argues.

“These situations can easily arise,” he says. Litzinger recalls one student who was sent out by his company to conduct what was essentially industrial espionage.

“He is forced to ask himself, ‘What do I do?’” he says. “Some of these situations can arrive very early in young people’s careers.”

Robert Pangborn, associate dean of undergraduate studies, says the next big push will be to design a curriculum for 2010, which will involve a holistic look at the entire engineering curriculum.

“There are so many things we could be doing to improve our undergraduate curriculum, but we can’t do them all,” he explains. “We have to find ways to get elements of what we want into our undergraduate curriculum and do them in a systematic way.”

— Curtis Chan
A major decision

For many engineering students, the first year at Penn State can be a challenging experience. Not only are they on their own for the first time—learning their way around campus and adjusting to college life—they’re also getting their first taste of engineering’s demanding curriculum.

Faced with these pressures, some students begin to doubt their choice of major. Fortunately, the College of Engineering’s Office of Undergraduate Studies provides resources that help reassure promising engineering students that they’re in the right place.

• The Engineering Advising Center (EAC) offers academic counseling for all first- and second-year engineering students. “Students often think they’re in the wrong place because they don’t have a direction in engineering,” explains Jean Landa Pytel, assistant dean of student services. “Our advisors help them find that direction.” Additionally, last year the EAC began sponsoring “major nights.” These department information sessions give students an opportunity to meet faculty and other students, tour department facilities, and learn more about particular majors.

• In Engineering Design & Graphics 100, students get a taste of engineering early in their academic careers. This first-year course features a design-driven curriculum that introduces students to the engineering approach to problem solving. “Classes are small, and faculty get to know the students better,” says Dhushy Sathianathan, chair and associate professor of engineering design and graphics. “As a result, there is a lot of informal counseling going on.” Equally important, he explains, is the support network that develops beyond the classroom. “Who their friends are and what their friends talk about has a large impact on what students do.”

• First-year Seminars (FYS), added to the Penn State curriculum in 1999, allow students to explore a range of engineering majors and careers. These small, interactive classes meet one or twice a week for lab projects, demonstrations, tours, and discussions about engineering. The College currently offers more than 50 different seminars that cover the gamut of engineering majors. “Many students report that they’re more confident in their engineering ability after completing the seminar,” notes Andy Lau, associate professor of engineering design and graphics and FYS coordinator for the College of Engineering.

• The Minority Engineering Program (MEP) offers a number of resources for students who are underrepresented in engineering. Among these are PREF, a four-week, pre-first-year summer bridge program for Penn State engineering and science students. PREF students take preparatory classes in pre-calculus, physics, and chemistry, learn time management and study skills, and participate in social activities. “We teach them all kinds of college survival skills,” explains Amy Freeman, MEP director. “Students who participate will generally have higher GPAs and be more likely to stay in engineering.” MEP also sponsors a peer mentoring program, which pairs first-year minority engineering students with upper-level student mentors.

• Special Housing Options for engineering students offer an enhanced on-campus living experience that fosters both academic and social support. Options include the First Year in Science and Engineering (FISE) House, the Engineering and Applied Science Interest (EASI) House, and Engineering Special Living Option (E-House). For alumna Damon Bradley (EE ’02), living in FISE House was a great experience. “First, there was a network of students studying the same things I was, so it wasn’t difficult to find a study partner,” he says. “Second, I got a sense of community among the members of FISE—an experience uncommon to typical residence halls. Finally, it was inspirational to live and work with a group of students with a rich variety of ethnic and cultural backgrounds; I felt this was a microcosm of the real world.”

• The Women in Engineering Program (WEP) provides professional and personal development opportunities for women engineering students at Penn State. During WEP’s summer orientation session held in August, incoming students participate in a variety of activities designed to introduce them to the College. “We try to give them an education about engineering and ownership of engineering,” says Barbara Bogue, WEP director. “We begin to build an important community, which is ultimately a big factor in retention.” Upper-level women play a key role in WEP, serving as mentors and keeping in touch with their protégés throughout the first year. Through WEP, women engineering students can gain additional leadership experience, as well, by assisting with WEP’s Girl Scout Saturday program, working as a peer instructor for a WEP-sponsored class, or serving as a program coordinator for WEP’s summer engineering camp for high school girls.

— Jane Harris
New flat motors can drive shape shifters, movers, and shakers

Penn State engineers have developed a low-cost, high-torque rotary motor based on “smart” materials that can be configured in a wide range of formats, including one as flat and thin as a CD case.

The inventors say that in the flat format, the motor could be used to drive changes in the camber of airplane wings or fins, essentially shape-shifting the curvature of the wing or fin surface. In other formats, the motor could work in tightly integrated spaces where other motors can’t fit. For example, the “smart” material motor could serve as the drive element in thinner, lighter laptop computers or other compact portable consumer products, or in manufacturing equipment that processes things by moving or shaking them.

Gary Koopmann, distinguished professor of mechanical engineering and director of the Center for Acoustics and Vibration (CAV), says the prototype’s components cost less than $150 off-the-shelf. He estimates that an optimized version might cost as little as $10 to mass produce.

The device, which was patented recently by Penn State, was invented by Koopmann; Chen Weicheng, CAV laboratory manager; George Lesieutre, professor of aerospace engineering and CAV associate director; Jeremy Frank, president of KCF Technologies; and Eric Mockensturm, assistant professor of mechanical engineering.

New, more effective option for gene data mining identified

A new approach to identifying patterns in gene expression analysis has been shown to be more effective than the most popular method in a joint Penn State and University of Buffalo study.

Using two published gene expression data sets as test cases, the research team found that the KL clustering method, which uses a novel measure of similarity not previously used for gene expression analysis, was superior to the most popular method, hierarchical clustering, in separating the data into dense clusters with similar patterns.

In gene expression analysis, the identification of groups of genes with similar temporal patterns of expression is usually a critical step because it provides insights into gene-gene interactions and the underlying biological processes. Experiments suggest that genes with similar function may exhibit similar temporal patterns of co-regulation.

Raj Acharya, head of computer science and engineering, says that although the study was conducted with gene data, KL clustering could be applied to any large set of temporal data.
New software creates dictionary for retrieving images

New software that responds to written questions by retrieving digital images has potentially broad application, ranging from helping radiologists compare mammograms to streamlining museum curators’ archiving of artwork, say the University researchers who developed the technology.

James Z. Wang, an assistant professor in the School of Information Sciences and Technology and the Department of Computer Science and Engineering and principal investigator, says the Automatic Linguistic Indexing of Pictures (ALIP) system first builds a pictorial dictionary and then uses it for associating images with keywords. The new technology functions like a human expert who annotates or classifies terms.

ALIP processes images the way people seem to. When we see a new kind of vehicle with two wheels, a seat, and a handlebar, for instance, we recognize it as “a bicycle” from information about related images stored in our brains. ALIP has a similar bank of statistical models “learned” from analyzing image features.

Students place fifth in tight FutureTruck contest

Of fifteen participating universities, Penn State engineers took fifth in the 2003 FutureTruck hybrid electric vehicle competition in Dearborn, MI, in June. Although their finish is the same as 2002, the team improved by 150 points this year. A mere six points separated the third-, fourth-, and fifth-place finishers.

The Penn State vehicle—a refitted Ford Explorer dubbed the “Wattmuncher”—won the Built Ford Tough Award from the company’s Michigan Proving Ground staff and took third place in Delphi’s Advanced Powertrain Technology Award.

The team also managed to upset overall winner Wisconsin in the oral presentation segment of the competition. It was the first time Wisconsin had not won the category in four years.
Two students named Tau Beta Pi scholars

Two Penn State engineering students were among the 39 recipients of Tau Beta Pi scholarships.

The students are Brian Genduso, an architectural engineer, and Kristen Voigt, a civil engineer. Both received Record Scholarships from the engineering honor society, which provides each winner with a $2,000 cash award for his or her senior year of engineering study.

Two students named Tau Beta Pi scholars

Barbara Bogue, director of the Women in Engineering Program, and Rose Marra, assistant professor of information science and learning technologies at the University of Missouri-Columbia, have received an $800,000, three-year grant from the National Science Foundation to develop standardized assessment instruments to measure the effectiveness of women in engineering (WIE) programs nationwide.

Bogue and Marra will work with the WIE programs at Penn State, Rensselaer Polytechnic Institute, Georgia Institute of Technology, the University of Texas at Austin, and the University of Louisville. Collectively, these five programs represent both public and private institutions and varying degrees of WIE director experience and student body characteristics.

Bogue and Marra will develop easily adaptable assessment tools that will allow WIE directors to collect data on programs, evaluate programs, and make decisions on how to revise programs and/or redistribute limited resources to maximize program effectiveness. Data from these instruments will also provide substantiated evidence for administrators, advisory boards, and potential funding agencies on the value of WIE programs.

Expendable microphones may help locate building collapse survivors

Data gathered by Penn State engineers in a volunteer effort at the World Trade Center tragedy suggests that simple, inexpensive microphones dropped into the rubble of a collapsed building may be able to aid search and rescue teams despite ground-level noise.

Thomas Gabrielson, associate professor of acoustics and senior researcher at the Applied Research Laboratory, says, “In conventional survivor searches, noise generating activities at the surface must be stopped while listening for survivors.”

However, the engineers found that the noise level in the interior voids of the rubble was about the same as that of a quiet residential neighborhood, even though the noise level at the surface was much higher due to constant operation of three heavy lift cranes, air hammers, and dozens of rescue workers.

“Our results suggest that if expendable microphones were dropped or thrown into the voids in a building collapse, the sounds from trapped survivors would be louder and the surrounding noise quieter so the acoustic search could be continued without interfering with other operations,” Gabrielson says.

Since the engineers made their measurements, they have developed small wireless microphones in hardened packages that can be thrown into areas too dangerous for people to enter. Gabrielson adds, “Our goal is to provide a small, light, easy-to-use and expendable tool that doesn’t burden the rescuer with bulky, complicated equipment.”
Concerns raised over safety criteria for blast resistance

Buildings constructed according to federal design criteria to be able to withstand earthquakes may not survive the effects of explosions from bombs small enough to be carried by a terrorist, Penn State Protective Technology Center (PTC) researchers have found.

Theodor Krauthammer, PTC director and study leader, says, “Our analyses show that three-dimensional structural steel welded connections designed to resist the effects of earthquakes may fail when subjected to small bomb blasts even when the structure is based on recommended design procedures.”

The steel design specifications, known as the Federal Emergency Management Agency (FEMA) 350 or the Seismic Recommended Design Criteria for New Steel Moment-Frame Buildings, were issued after recent earthquakes in the United States highlighted weaknesses in the design and construction of steel connections.

“Important design modifications were introduced into these seismic design guidelines following the assessments of earthquake performance,” Krauthammer explains. “Now, our preliminary study has produced findings that raise concerns about the safety of using the modified structural steel connections for blast resistance.”

Penn State selected for international roads project

The World Road Association, which facilitates the international exchange of knowledge and techniques on roads and transportation, has selected Penn State’s Engineering Library as the U.S. representative for a worldwide project on road information.

According to the association, Penn State’s selection was based on the qualities of its civil engineering program, student body, overall transportation engineering expertise, and library networking capabilities, as well as its inclusion of an active transportation librarian on staff.

The project will familiarize engineering students and younger road practitioners with the association’s activities, products, and resources.
2003 student marshals

Each spring at the College of Engineering’s commencement ceremony, at least one student from each major has the honor of being named student marshal. Student marshals are chosen on the basis of their academic achievement and contributions to the College. The following student marshals from the spring 2003 graduation ceremony are among our best—and we’re proud to introduce them to you.

**Nuclear Engineering**

Patrick Hahn of Rochester, NY
Employed by Electric Boat of Groton, CT, and engaged to be married

**Computer Science**

Benyah Shaparenko of Myerstown, PA
Pursuing a Ph.D. in computer science at Cornell University

**Aerospace Engineering**

Blair Basom of Mechanicsburg, PA
Pursuing a master’s degree in aerospace engineering

**Industrial Engineering and ROTC**

Travis W. Nichols of Haymarket, VA
Employed by the U.S. Army

**Engineering Science**

Alan Hoskinson of Mentor, OH
Pursuing a Ph.D. in nuclear engineering at the University of Wisconsin

**Computer Engineering**

Mark Krill of Pittsburgh, PA
Pursuing a career in computer engineering

**Chemical Engineering**

Greg Thurber of Spring Grove, PA
Pursuing a Ph.D. in chemical engineering at the Massachusetts Institute of Technology

**Civil Engineering**

Emmalynne Hu of Murrysville, PA
Pursuing a graduate degree

**Architectural Engineering**

David Knapp of Arlington Heights, IL
Employed by DeSimone Consulting Engineers in New York City

**Mechanical Engineering**

Robert J. Riffert Jr. of Lansdale, PA
Employed by Unilever as a supply chain associate

**Electrical Engineering**

Carolyn L. Hilferty of Willow Grove, PA
Employed by Lockheed Martin in King of Prussia, PA

**Agricultural & Biological Engineering**

Jesse R. Burow of Confluence, PA
Dear Engineering Alumni and Friends,

Spring was a busy and exciting time for PSES. This year’s recipient of the PSES Student Service Award was Jason Donahue, a 2003 industrial engineering graduate. Jason was recognized for his service to the Engineering Mentorship Program; Thon chair; Power Sources Leadership Development facilitator; and Big Brothers Big Sisters of America. He accepted the award during a special ceremony sponsored by the AT&T Center for Service Leadership at Penn State at the Nittany Lion Inn in April.

At our May meeting, we officially welcomed a new affiliate program group, the Penn State Nuclear Engineering Society (PSNES). Newly elected president, Jeff Jeffries (NucE ‘70), reported that enrollment in the program has significantly increased in the past year and the job market for nuclear graduates is very good. PSNES joins three other department affiliate groups: PSCEE (Penn State Civil and Environmental Engineering), PSEES (Penn State Electrical Engineering Society), and PSIMES (Penn State Industrial and Mechanical Engineering Society).

As PSES president, I participate in the Spring College of Engineering graduation ceremonies. On May 17, I welcomed 791 new engineering graduates to membership in the Penn State Alumni Association and the Penn State Engineering Society. For you “new” members, this will be your first issue of the College’s magazine. I hope you enjoy reading the feature stories as well as perusing the alumni section. As new members, you are invited to become active in PSES. We sponsor and participate in a variety of programs and activities which may be of interest to you. Please don’t hesitate to contact me (dyd1@psu.edu) or Cindy Jones (cjdo@engr.psu.edu) for more information about ways you can stay in touch with your alma mater.

The fall months are always the busiest time of the year at University Park. For PSES, this fall is especially exciting as we celebrate the first decade of our annual Golf Classic and the 45th anniversary of the society. Current and former members will enjoy a sumptuous buffet and listen to a jazz trio in the Hintz Alumni Center. This is a significant milestone for PSES, the first college alumni society founded at Penn State.

PSES will again participate in the College’s Open House on Feb. 28, 2004, in the Hintz Alumni Center. This is an excellent opportunity for alumni to interact with potential new students and their parents. Alumni can influence students’ decisions in the engineering program at Penn State. For more information about how you can participate, contact Cindy Jones or me.

I am pleased to welcome four new members to the society’s board of directors: Ed Heckman (ESci ‘66), Gerald (Jerry) Kolbe (EE ‘86), Susan McNulty (ABE ’99), and Anita Todd (ME ’89). These individuals have been active members of PSES for several years and will be valuable additions to the board.

From your president
PSES Faculty/Staff Awards recognize outstanding teaching, advising, research and service

On Mar. 21, the PSES Faculty and Staff Awards ceremony was held in the Kunkle Activities Center. This program, underwritten by a PSES endowment, recognizes excellence in College faculty and staff. Nominations for the awards are submitted by the departments and are selected by committees composed of former recipients, associate deans, and PSES board members. Dean David N. Wormley and PSES President Diane DeLozier conferred the awards and student speakers Claire Martin (IE ’03) and Kimberly Murray (CSE ’03) introduced the awardees.

The PSES Outstanding Staff Award was presented to three recipients: Diana Feltenberger, staff assistant, electrical engineering; Linda Hosterman, staff assistant, industrial and manufacturing engineering; and LaRue Jacobs, administrative assistant, mechanical and nuclear engineering.

The PSES Outstanding Advising Award was given to Sven Bilén, assistant professor of electrical engineering and engineering design, and M. Kevin Parfitt, associate professor of architectural engineering.

The PSES Outstanding Teaching Award recipients were Fan-Bill Cheung, professor of mechanical engineering; Natarajan Gautam, assistant professor of industrial engineering; and Linda M. Hanagan, assistant professor of architectural engineering.

The PSES Outstanding Research awardees were Lily (Ageliki) Elefteriadou, associate professor of civil engineering; Kostadin Ivanov, associate professor of nuclear engineering; and Thomas N. Jackson, Kirby Chair Professor of Electrical Engineering.

The Premier Award for Teaching was presented to Mario Sznaier, professor of electrical engineering.

The Premier Research Award was given to Michael F. Modest, professor of mechanical engineering.

Two awards were made for Distinguished Service to the College: Robert J. Heinsohn, professor emeritus of mechanical engineering, and Harry West, professor emeritus of civil engineering.

Also presented at the ceremony was the Lawrence J. Perez Memorial Student Advising Award. Named for the former professor of civil engineering and associate dean of the College, this award was established by the Perez family. The 2003 recipient was Andrea Schokker, assistant professor of civil and environmental engineering. Nominations for this award are submitted by current students in the College.
Michael H. Creazzi (ME ‘65) is owner and president of Trek Equipment Corporation, a general-purpose electronic test and measurement equipment rental company. Located in Sausalito, CA, Trek Equipment was ranked 119 on Inc. magazine’s 2002 list of the 500 fastest-growing privately held companies in the U.S. Creazzi resides in Tiburon, CA.

Kenneth S. Peterson (IE ‘66) is retired from the U.S. Air Force, where he attained the rank of brigadier general and served as an F-15 wing commander. During his military career, he received 37 decorations, including the Legion of Merit, two Distinguished Flying Crosses, eleven Air Medals, and the Purple Heart. Currently, Peterson is a captain with Delta Airlines. He plans to retire from Delta in the near future and pursue a career as an aviation consultant specializing in operational issues.

Kenneth S. Komoroski (CEE ‘77) has been appointed by President George W. Bush as a Federal Commissioner of the Ohio River Valley Water Sanitation Commission. The commission, established in 1948 to control and abate pollution in the Ohio River Basin, represents eight states and the federal government. Komoroski holds a juris doctorate degree from the University of Pittsburgh and is a partner in the environmental and natural resources practice group of Kirkpatrick & Lockhart, a national law firm with offices throughout the U.S. He and his wife, Joyce Kraski Komoroski (Sci ’78), reside in Venetia, PA, with their three sons, Doug, Adam, and Evan.

James E. Loesch (CEE ‘73) was elected a Fellow of the International Facilities Management Association in October 2002. Loesch, who is plant facility chief engineer at Johns Hopkins University Applied Physics Lab, has authored papers and contributed to books about the facility management profession. He has taught courses on strategic planning and building code compliance and is a pioneer and world-renown authority on total quality management.

Charles M. Sulik (EE ‘79) is manager of electrical engineering for Environmental Systems Products, a leading auto emissions test equipment and services company located in Tucson, AZ.

Scott K. Purnell (Che ’89) is marketing manager, FCC and clean fuels technologies, for the Davison Catalysts business unit of W. R. Grace & Company in Columbia, MD. Purnell and his wife, Terry Kennedy Purnell (’89 HHD), live in Ellicott City, MD, with their two children, Emily, age 5, and Jack, age 3.

Heather Fennessey (ChE ’93) is an environmental specialist assigned to six Pennsylvania Small Business Development Centers (SBDC) in central Pennsylvania. Based at University Park, Fennessey provides free and confidential on-site environmental consulting for small business owners in the counties served by SBDCs at the following universities: Penn State, Bucknell, Clarion, Lock Haven, St. Francis, and Scranton.

James S. Garvin Jr. (AE ’95) and his wife, Kelly, announce the birth of their son, Luke Samuel, on Oct. 24, 2002. Garvin is a municipal engineer with Senate Engineering Company in Pittsburgh. He and his family live in Latrobe, PA.

Wendy (Holtzman) Golden (EE ’90) is an electrical engineer with Lamus Company. She and her husband, David, were married on Sept. 1, 2002. They reside in San Pedro, CA.

Shawn K. Leppo (Che ’99) and Holly M. Williams (A&A ’98) wed on Mar. 15. Leppo is a patent attorney with Hunton & Williams in Richmond, VA. His spouse is an architect with Hopke & Associates in Williamsburg, VA. The couple resides in Richmond.

Daniel M. Reichard (EE ’96) and Susan E. Stamp were wed on June 1, 2002. Reichard is a system protection engineer with Niagara Mohawk, an electric utility company located in upstate New York. Last year, he completed the Power Systems Management Program at the Worcester Polytechnic Institute’s School of Industrial Management. Reichard and his wife live in Lacona, NY.

Theodore P. Riedel (IE ’93) and his wife, Jean, announce the birth of their son, Noah David, on Sept. 4, 2002. Riedel is a marketing manager with Campbell Soup Company. He and his family reside in Sewell, NJ.
Adam R. Levin (IE ‘00) is manager of labor forecasting and planning at Walt Disney World and Disney-MGM Studios in Orlando, FL. Levin leads a team of industrial engineers who oversee the labor management process through the use of operations research techniques.

In memoriam

Clarke L. Coldren (ChE ‘48) passed away May 4 in Katy, TX. He was 77. Coldren spent 32 years with Shell Oil where he managed a variety of assignments, including the company’s technical development laboratory and its epoxy resins business. After retiring in 1984, he was active in the Executive Service Corps of Houston, a group of retired executives who provide management consulting services to nonprofit organizations. He is survived by his wife of many years, Carol, and four daughters.

Got news?

We’ll be the first to admit that campus hasn’t been the same since you left Happy Valley. We’d love to know what you’ve been up to. Have you gotten a new job, a promotion perhaps, or even married?

Just go to our website at www.engr.psu.edu/alumni and follow the links to send us your news. We’ll make sure it appears in an upcoming issue of Engineering Penn State Magazine. You may also send your news through regular mail to:

Jane Harris
Engineering Penn State Magazine
101 Hammond Building
University Park, PA 16802
jharris@engr.psu.edu

Photographs are also welcome. Pictures may be sent or e-mailed to us (please scan them at 300 dots per inch). Please include your address if you wish the photos to be returned to you.

We look forward to hearing from you!

Alum helps design Venice floodgates

In order to alleviate the constant flooding that plagues the canal city of Venice, Italy, a group of engineers designed a series of floodgates to stop the influx of water when the sea level rises.

Donald R.F. Harleman (CE ‘47), a professor at the Massachusetts Institute of Technology, and a group of MIT colleagues helped design the Modulo Sperimentale Elettromeccanico (MOSES), or Experimental Electromechanical Module. According to the American Geophysical Union, MOSES will employ 79 gates at three lagoon inlets. When water levels exceed 43 inches above normal, air will be forced into the hollow gates. The structures will then rise and block water from entering the lagoons, thus stopping the flooding of Venice.

Although the Italian government is going ahead with the eight-year, $2.6 billion plan, scientists, politicians, environmentalists, and citizens continue to debate the potential impact of MOSES.
Continuing Education

Transportation Short Courses (new)
L. ELEFTERIA DOU
To serve the growing need for transportation-related continuing education, the Pennsylvania Transportation Institute (PTI) is offering the following best-practices, short courses by Institute experts.

Measurement of Surface Characteristics—Oct. 1-3
Construction Contract Interpretation—Oct. 28-30
The Interaction Between Transportation and Supply Chain Management—Mar. 29-31, 2004

For details, see PTI’s education web page, www.pti.psu.edu/coned, for details.

Executive Education Courses (new)
The College of Engineering is partnering with Executive Programs in the Smeal College of Business to offer the following engineering-related executive education programs.

Management Program for Transportation and Highway Engineers—Sep. 7-12
Manufacturing Operations Efficiency and Effectiveness—Sep. 21-26

For details, see the Executive Programs web page, www.smeal.psu.edu/psep.

Smoke School/Visible Emissions
This lecture/laboratory course covers the regulation and behavior of visible emissions (plumes) from industrial processes. Each individual’s ability to evaluate plumes will be tested, using a smoke generator. Those who pass the tests will be certified in accordance with EPA Method 9.

- Sep. 16-17—McKeesport, PA
- Sep. 23-24—Allentown, PA
- Sep. 30-Oct. 1—University Park
- Oct. 7-8—Rochester, NY
- Oct. 14-15—Cleveland, OH

Powder Technology Programs
R. GERMAN
The Center for Innovative Sintered Products (CISP) offers short courses, workshops, and conferences to disseminate information regarding sintering and powder technology. Following is a list of upcoming CISP programs.

Sintering 2003, an international conference on the science, technology, and applications of sintering—Sep. 15-17
Powder Injection Molding Tutorial—Oct. 1-3

For details, see the CISP web page, www.cisp.psu.edu.

Fundamentals of Food Science
This three-and-a-half day short course, offered by the Department of Food Science in the College of Agricultural Sciences, is intended to quickly familiarize engineers and scientists, with little or no experience in the food industry, with core concepts in the areas of food microbiology, food chemistry, food engineering, and nutrition. The topics have been selected to assist entry-level engineers, chemists, and biologists, or mid-career individuals making a functional transition, to quickly adapt to the food-manufacturing environment.

- Sep. 22-26—University Park

Annual Transportation Engineering and Safety Conference
Presented in cooperation with PennDOT, the Mid-Atlantic Universities Transportation Center, LTAP, and the Federal Highway Administration, this conference is aimed at improving the skills of the transportation professional through training workshops and presentations by transportation experts. The forum is designed to foster discussion and debate and to encourage questions, so that attendees can maximize their learning experience.

- Dec.10-13—University Park
The Penn State College of Engineering received more than $130 million in gifts and pledges during the University’s seven-year Grand Destiny capital campaign. According to Engineering Dean David Wormley, the original goal for the College was $100 million.

“It is a true testament of the commitment of our alumni, friends, corporate partners, and faculty and staff that we exceeded our campaign goal,” Wormley says. “In fact, giving to the College increased every year of the campaign, including the most recent.”

The University embarked on the Grand Destiny capital campaign in 1996 with a goal of raising $1 billion for Penn State. With the close of the campaign on June 30, Penn State raised $1.371 billion in gifts and pledges.

Campaign donations to the College will benefit a range of people and activities in engineering, Wormley says.

“The private gifts we receive enable our students, faculty, and programs to reach a level of achievement unattainable through funding from public revenues and other sources,” he explains. “The donations from the campaign allow us to maintain our distinction as one of the top engineering schools in the country.”
The College of Engineering has received its first Trustee Scholarship through a gift from the Eberhardt family of Lancaster, PA. H. Alfred and Nedra Eberhardt have pledged $100,000 to form the H. Alfred and Nedra Eberhardt Trustee Scholarship.

H. Alfred Eberhardt is a 1948 mechanical engineering graduate and retired president and CEO of Hale Products, Inc. In 1997 he was named an Outstanding Engineering Alumnus, the highest award bestowed by the College of Engineering. Eberhardt also was named a Penn State Distinguished Alumnus in 1999.

The Eberhardts are among the College’s most generous donors and have supported the University for many years. In recognition of their philanthropy to Penn State, they were inducted into the Mount Nittany Society in 1994.

The Eberhardts’ scholarship will provide financial aid to students who are enrolled or are planning to enroll in the College of Engineering and who also demonstrate financial need.

“We’re delighted to participate in this new program to make a Penn State education affordable to deserving applicants,” said Alfred Eberhardt.

The Penn State Trustee Scholarship Program’s goal is to raise $100 million in new undergraduate scholarships across the University between July 1, 2002, and June 30, 2007.

As a part of the program, the University will match five percent of the original pledged amount annually. The match is in addition to the earnings generated by the endowment.

Scholarships created by the program will be used to help students with the greatest financial need. The aim is to ensure that a Penn State education remains affordable for all qualified students.

According to the Office of University Development and Alumni Relations, 74 percent of Penn State undergraduates received more than $367 million in student financial aid during the 2000-01 academic year. However, 60 percent of those funds, or approximately $200 million, were in the form of student loans, resulting in an average student loan debt of $17,400 after graduation.

Since the program was announced, nearly $1 million has been generated in new gifts to the University.

Special guests at the Grand Destiny closing included the Nittany Lion mascot and football coach Joe Paterno.
Marcuses named Philanthropists of the Year

Long-time University benefactors Hal and Inge Marcus of Olympia, WA, were named Penn State’s 2003 Philanthropists of the Year.

The Philanthropist of the Year award, which debuted in 2002, is one of the University’s highest distinctions, recognizing exceptional generosity and philanthropic leadership that improves the quality of life for the Penn State community.

“Hal and Inge’s support for the College of Engineering at Penn State has been unparalleled,” said Penn State President Graham Spanier. “They have used their resources to make a significant impact in the discipline of industrial and manufacturing engineering that will be felt for years to come. With their involvement in higher education at Penn State and elsewhere, Hal and Inge are making a difference for generations of students.”

Penn State’s Department of Industrial Engineering was the first of its kind in the world when it was established in 1908. The Marcuses’ gift commitment of $5 million in 1998 ensures the future vitality and stature of the department, which has come to be recognized as one of the top industrial engineering programs in the nation. In 1999 the department was renamed the Harold and Inge Marcus Department of Industrial and Manufacturing Engineering.

“The endowments established by Hal and Inge provide exciting new opportunities for students and faculty, and will help prepare graduates for employment as world-class engineers,” said David Wormley, dean of the College of Engineering. “The Marcuses’ gift also enables us to develop strong interdisciplinary curricula and research, with manufacturing engineering as a focus.”

Through an earlier gift, the Marcuses established the Marcus International Exchange in Industrial Engineering—A Partnership Between Penn State and Technion (Israel Institute of Technology). This unique program has utilized technology to provide for unprecedented international exchange and collaboration for students, despite the tensions and violence that have made traveling to Israel difficult.

“Collaboration between the two institutions remains strong and productive,” said Richard Koubek, department head.

A native of Brooklyn, NY, Hal Marcus graduated from Penn State in 1949 with a degree in industrial engineering. He went on to an international career in his field and later developed a real estate company. He holds a master’s degree from the University of Southern California. He is president of Hal Marcus Inc. and American Villages Inc., real estate development and management companies.

In 1998 Marcus was named an Outstanding Alumnus by Penn State’s College of Engineering. In 2000, he was awarded a doctorate of humane letters by St. Martin’s College, Olympia, WA, where he has served in many capacities, including as president of the college’s board of trustees.

Originally from Copenhagen, Denmark, Inge met and married Hal while he was on a three-year engineering assignment in Denmark in the early 1960s. Inge earned her B.S. in biology from St. Martin’s College and an M.S. in health sciences from Chapman University. She serves St. Martin’s as an adjunct instructor in biology.

The Marcuses are members of the Mount Nittany Society and lifetime members of the Penn State Alumni Association, and they are avid fans of the Nittany Lions football team.
A ‘grand destiny’ for engineers

Penn State recently completed the Grand Destiny Campaign as the University nears its 150th year. The impact of the campaign has been greater than any of us envisioned when it was planned. The campaign spanned seven years during which the country experienced significant economic growth—many called it a boom—and then in the last two years, a large economic contraction that has led to very difficult times for many states.

Last year and again this year, the Commonwealth decreased its support for Penn State. As a result, the impact of the campaign is even more important.

During the Grand Destiny, the University received gifts and pledges in excess of $1.3 billion, surpassing all expectations. A significant portion of these funds will continue to provide income to support critical University needs in the future.

During the campaign, corporations, alumni, and friends of the College have gifted and/or pledged more than $130 million to support Engineering. Approximately $69 million of the gifts and pledges were designated to increase the engineering endowments that support students and faculty in the College. These funds have sustained undergraduate and graduate students who otherwise would not be able to receive an engineering education at Penn State.

Along with alumni and friends, faculty and staff in the College created the Staff Dependents Fund, which provides help for staff members’ children who are attending a Penn State campus. The establishment of this endowment represents the strong commitment and sense of family that engineering faculty and staff share in the College.

A significant feature of the campaign is the establishment of faculty support. Professors who are just beginning their careers are being supported through faculty development professorships, which were inaugurated during the Grand Destiny. These development professorships help faculty members cultivate their teaching and research activities early in their careers. Those who have received these professorships have already commented on the critical importance that the recognition and financial support provided in launching their productive careers. Equally important are the professorships and chairs established for senior faculty, which recognize their achievements and sustain their cutting-edge work in teaching and research.

These levels of faculty support have allowed us, even in these difficult times, to attract and retain an absolutely outstanding faculty. More than 39 percent of our senior faculty have been named Fellows in their respective professional societies, which is an indicator of the high level of recognition and stature they’ve received. Additionally, many of our engineers have been honored in university-wide awards ceremonies, which recognize devotion to teaching, advising, and research.

Endowments have also been established to support educational programs in the College, including those that will grow our students to be leaders of the future. The programs to develop leadership, enhance entrepreneurial skills of our students, and integrate ethics into the engineering curriculum were all established with the assistance of significant endowments. These results from the campaign have measurably impacted our curriculum and have provided our students with opportunities that will allow them to excel in the future.

As I reflect on the campaign’s closing, my confidence in the advancement of the College of Engineering has never been greater. With the support of alumni and friends, the dedication of our faculty and staff, and the energy and excitement of our students, we have, in fact, a very bright future. I wish to personally thank each and every one of you who have helped us during this Grand Destiny Campaign to make the College better and prepare it for the future—a future with a grand destiny.
Throughout the summer, incoming students and their families attend Penn State’s First-Year Testing, Counseling, and Advising Program (FTCAP). The day-long sessions are designed to ease some of the anxieties associated with the transition from high school to college. Students attending FTCAP learn about class selection, balancing coursework, and other aspects of life at Penn State. This summer marks FTCAP’s 47th year at the University.