



Mechanical Engineering News

Winter 2009



The Class of 2009 - The Future of Engineering



Inside this issue:



Message from the Chair



This is an exciting time at the University of Delaware, as well as within the College of Engineering and the Department of Mechanical Engineering. UD President Patrick Harker has initiated the Path to Prominence to “engage closely with the critical issues of our day, to increase the global impact of the University, and to raise its prominence in the world.”

Milestones on the Path to Prominence include a diverse and stimulating undergraduate academic environment, a premier research and graduate university, excellence in professional education, the initiative for the planet, the global initiative, and the engaged university. The College of Engineering and the Department of Mechanical Engineering are now in the process of developing a strategic plan that will be consistent with the University’s plan and guide us toward the future through a series of specific action items that will help us meet these milestones and increase the University of Delaware’s visibility.

Within the past six months, we have had a number of important changes in personnel, which are highlighted in more detail in articles in this issue of the newsletter. I would like to just summarize them here.

Former ME Chair Tom Buchanan was named Deputy Dean of the College of Engineering when Michael Chajes was appointed Dean in July 2008. Despite his increased administrative duties, he is still an active member of the department. A national search is underway for a new ME chair, and I have agreed to serve as Interim Chair until the position is filled.

Three new faculty members joined the Department in September 2008, all at the rank of assistant professor. David L. Burris, whose research focuses on tribology at the nano-scale and composite materials, comes to us from University of Florida. Joshua L. Hertz received his PhD at MIT and conducted postdoctoral research at NIST before joining our department. His research interests include fuel cells and M/NEMS. Herbert G. Tanner was previously at the University of New Mexico, the University of Pennsylvania, and the National Technical University of Athens. His research expertise lies in the area of robotic systems.

In other news, I am pleased to announce that the department is now host to the Center for Fuel Cell Research, with Ajay K. Prasad serving as director. We have several exciting fuel cell and clean energy projects underway. In addition, our Center for Biomedical Engineering Research has received NIH research grants totaling over \$20 million to conduct research on osteoarthritis and stroke. Jill Higginson is now the Director of this center.

Our faculty members continue to be very accomplished, winning awards, serving as journal editors, delivering keynote lectures at international meetings, and being honored as professional society fellows.

We are also very proud of our students, especially our seniors, who just completed their Senior Design experience. Thanks to the excellent response of the industrial community, this course enables them to complete projects based on real products and processes. This year, 16 companies sponsored senior design teams.

As always, we very much appreciate the support of our sponsors, alumni, and other friends. Please do not hesitate to contact me if you have news to share with us or ideas for new collaborations.

Anette Karlsson, Interim Chair *Anette Karlsson*

Inside This Issue

Greetings from the Chair	1
Editor’s Notes.....	1
Faculty and Staff Highlights	2

Department News

University of Delaware Launches Fuel Cell Center	3
Karlsson Named Interim Chairs.....	3
New Faculty in ME.....	4
New ME Professor Wins National ASME Award	4
NIH Grant To Support Treatment of Gait Disorders	5
ME Professor Receives Multiple Honors from Professional Community.....	5
Thostenson Awarded Air Force Young Investigator Grant	6
Barry Seidel	6
In Memoriam: Maurice Young.....	7
College Announces Administrative Changes.....	7

Student News

Mechanical Engineering Seniors Deliver Final Design Presentations	8
Student Profile: Anne Martin	9
ME Grad Student Spends Time at German Aerospace Center	9

Alumni News

New Development Officer Joins the College of Engineering	10
Benjamin Herring Scholarship Award... 10	
UD Initiates Entrepreneur in Residence Program	11
ME to Hold Fifth Career Conference... 12	
2009 Distinguished Career Alums Selected	13
Alumni News Briefs	15
Alumni Profile: Jennifer Pyle	16
Alumni Support.....	17

ME News

Managing Editor—Nate Cloud
Contributing Writer —Diane Kukich

Editor’s Notes:

The 5th “Career Celebration” event will be held on Friday afternoon, May 1st, at Clayton Hall. (article on page 12). The planning team of alums, faculty, and students sincerely hopes that all UDME alums will see this as an opportunity for networking, learning, and reunion; and for celebrating and sharing your career experiences with others, especially our students. The program, under the leadership of Jim Hutchison, ’78, CEO StudioJAED, will have a number of ways to facilitate this. Please save the date, and we will look forward to seeing you on May 1st 2009.

Nate Cloud

Faculty & Staff Highlights



Jill Higginson was named director of UD's Center for Biomedical Engineering Research (CBER), effective July 1, 2008, and **Elaine Nelson** was named CBER staff assistant. CBER

is interested in innovative research proposals and possible industry sponsors for pilot projects or student awards and plans to issue an annual report this year highlighting its activities. For more information, visit the updated website at www.cber.udel.edu.

David Burris (*see page 4*) has won the Marshall B. Peterson Award from the American Society of Mechanical Engineers (ASME) in recognition of early career



achievements, as demonstrated by publication in ASME scientific journals, the potential for excellent research and the relevance of his research to tribology.

Ajay Prasad (*see page 3*) is founder and director of UD's newly established Center for Fuel Cell Research (CFRC) to improve understanding of fuel cells and to address



the issues and barriers to commercialization. CFRC will provide opportunities for fuel cell research and demonstration projects such as the University's fuel cell bus.

Kausik Sarkar gave invited talks in Center for Advanced Modeling and Simulation, Idaho National Laboratory and Department of Mechanical Engineering, University of Maryland at Baltimore County. He was one of the organizers of the XVth International Congress of Rheology at Monterey Bay.



He co-organized a mini-symposium on Interfacial Rheology. He also organized the third forum on Biological Flows in 2008 ASME Summer Fluids Engineering

Conference in Jacksonville.

Tsu-Wei Chou continued to be active in his research on nanoscience and technology. He delivered the following lectures in 2008 on these topics:



- Mechanical Engineering Distinguished Lecture, Stony

Brook University, N.Y.

- Symposium on Advances in Composites and Layered Materials, Venice, Italy
- American Society for Composites 23rd Technical Conference, Memphis, Tenn.
- Florida State University, Tallahassee, Fla.
- Institute for Nanotechnology, George Washington University, Washington, D.C.

Chou also attended the US-Japan Conference on Composite Materials in Tokyo, Japan with Center for Composite Materials Director Jack Gillespie to present the Medal of Excellence in Composites to Dr. Takashi Ishikawa, who was a Visiting Professor in Mechanical Engineering Department.

Lian-Ping Wang was an invited speaker and participant at a workshop on "Physics of Climate Change", held at the Kavli Institute for Theoretical Physics, University of California, Santa Barbara in June 2008. He and his student Hui Gao spent three weeks working and interacting



with resident and visiting scientists at the Kavli Institute. In July-August 2008, Wang was a Visiting Scientist at the National Center for Atmospheric Research (NCAR) in Boulder, CO. His postdoc Dr. Bogdan Rosa and graduate student Hossein Parishani joined him at NCAR to use the supercomputing resources for their research on turbulent collision of cloud droplets. In September 2008, Wang made a three-week visit to Max Plank Institute of Physics and Complex Systems in Dresden, Germany, as an Invited Speaker and Lecturer for the International School and Workshop on "Dynamics of Inertial Particles: From Ocean and Atmosphere to Planets". He delivered one conference talk and a sequence of four 90-minute lectures on the topic of "Computational and theoretical study of turbulent collision of inertial particles".

In July 2008, Wang also delivered two talks on cloud physics research at the 15th International Conference on Clouds and Precipitation in Cancun, Mexico. At the November 2008 APS Division of Fluid Dynamics (DFD) meeting in San Antonio, TX, his group presented a total of six talks on research associated with cloud physics and contaminant transport in soil porous media. Three of Wang's graduate students (Hossein Parishani, Charmaine Qiu, Grace Shi) received APS DFD Travel Award (\$500 each) to attend the San Antonio meeting.

Erik Thostenson (*see page 6*) recently received a prestigious Young



Investigator Proposal Award from the Air Force Office of Scientific Research to support his research on the development of composite

sensors and actuators. Thostenson also gave an invited seminar, Carbon Nanotube-Based Composite Materials: Bridging the Micro and Nano Scales, sponsored by the Mechanical Engineering and Mechanics (MEM) Department at Lehigh University on November 7, 2008.

Department News



Karlsson Named Interim Chair

Anette Karlsson, Associate Professor, has been named Interim Chair of the Department of Mechanical Engineering at the University of Delaware. The position became open when former Chair Tom Buchanan was named Deputy Dean of the College of Engineering, effective July 1, 2008.

Karlsson received a PhD in Mechanical and Aerospace Engineering at Rutgers University, New Jersey, in 1999 in the area of solid mechanics, and she conducted postdoctoral research at Princeton University before joining the University of Delaware faculty in 2002.

She was the recipient of an ONR Young Investigator Award in 2004 and the Francis Alison Young Scholars Award in 2005.

Karlsson's research interests include the thermo-mechanical properties and response of advanced and traditional materials. Her current research focuses on composite structures, polymer fuel cells, thermal barrier systems, ultralight metal structures and instrumented indentation.

A search is underway to appoint a permanent chair in the department.

University of Delaware Launches Fuel Cell Center

Article by Diane Kukich



The University of Delaware has established the Center for Fuel Cell Research (CFCR) to improve the understanding of fuel cells and address critical issues and barriers to commercialization. The center will also provide undergraduate and graduate students with the opportunity to participate in fuel cell research and demonstration projects. Ajay Prasad, professor of mechanical engineering, founded the center and is serving as its first director.

CFCR research focuses on a broad range of topics in fuel cell and hydrogen infrastructure science and technology; the overall goal of the work is to improve performance and durability

with novel materials, architectures, and operating strategies.

"Delaware is a great place to start a fuel cell center," Prasad says. "We have a large number of people here at UD doing work related to this subject, and many of the major players in the fuel cell market are within a 50-mile radius of the university."

The new center is housed in the Department of Mechanical Engineering and includes some 25 faculty members from the Colleges of Engineering, Arts and Sciences, and Marine and Earth Studies. Traditionally, fuel cell research was mostly done by electrochemists, but Prasad says that there are tremendous opportunities for engineers

and material scientists as well. "It is also necessary to involve diverse fields like biotechnology in fuel cell and hydrogen research," he adds. "For example, photobiological water splitting using certain types of bacteria and sunlight might offer an exciting, renewable way to produce hydrogen in the future."

Important components of the center's mission are technology transfer to industry and public outreach to educate the community about the benefits of fuel cells through programs such as the University's fuel cell bus. "By 2011, we should be up to four buses," Prasad says, "and we also have plans to build two more hydrogen refueling stations, one in Wilmington and one in Dover." There is already a station in Newark.

Prasad sees three barriers to widespread adoption of fuel cell technology: cost, durability, and the lack of a hydrogen infrastructure. CFCR research is addressing issues related to all three.

"Public acceptance is also an important issue," Prasad says, "and the bus project has helped by increasing awareness. The presence of three filling stations in the state also has the potential to contribute to future efforts to attract fuel-cell related research and demonstration projects to Delaware."

"I think that the University of Delaware will benefit from a timely confluence of political, industrial, and academic agendas centered on alternative energy approaches," he adds continues. "The fuel cell effort is an important part of that."

New Faculty in ME

Three new faculty members joined the Department of Mechanical Engineering in September 2008, all at the assistant professor level.



David L. Burris holds bachelor's, master's and doctoral degrees from the University of Florida, and he served as a postdoctoral associate there before joining the UD faculty. Burris' research interests include nanostructured materials, experimental sliding mechanics, interfacial phenomena, origins of friction, and wear resistance mechanisms of nanostructured

materials. He recently won the Marshall B. Peterson Award from the American Society of Mechanical Engineers (ASME). The award is given biennially in recognition of early-career achievements and promise for pursuit of research in tribology.

Joshua L. Hertz earned his bachelor's degree in ceramic engineering from Alfred University, and his PhD in materials science & engineering from the Massachusetts Institute of Technology. His research interests encompass nanomaterials for energy applications, including fuel cells, advanced batteries, solar cells, and hydrogen generation. Before joining UD, he was a National Research



Council Postdoctoral Fellow at the National Institute of Standards & Technology (NIST).



Herbert G. Tanner holds a PhD in mechanical engineering from the National Technical University of Athens. His research interests include cooperative planning and control of networked mobile robots, modeling and abstraction of hybrid systems, and coordination of mobile sensor and actuation networks. Before joining UD, he was a postdoctoral fellow in the Department of Electrical & Systems Engineering at the University of Pennsylvania. Tanner won an NSF Career Award in 2005.

New ME Professor Wins National ASME Award

Article by Diane Kukich

David Burris, assistant professor of mechanical engineering, has won the Marshall B. Peterson Award from the American Society of Mechanical Engineers (ASME). The award is given biennially in recognition of early-career achievements and promise for pursuit of research in tribology.

Tribology is the science and technology of interacting surfaces in relative motion, and the term generally refers to such phenomena as friction, wear, and lubrication.

Selection of Peterson award recipients, who must be less than 30 years old, is based on early achievement in research as demonstrated by papers published in scientific journals of ASME, the

potential for excellence in pursuit of research, and the relevance of the research to materials aspects of tribology.

Burris, who joined the UD faculty in September, is working to build a research group and establish facilities for material development, characterization, and testing. He holds bachelor's, master's, and doctoral degrees from the University of Florida, an institution widely recognized as a leader in the area of tribology and interfacial sciences.

"Although 'tribology' isn't exactly a household word, the consequences of tribological phenomena are far-reaching and costly," Burris says. "Small improvements in our ability to manage

friction and prevent wear can produce cost and energy savings throughout the life cycles of products, from energy extraction and conversion to parts manufacturing, product operation, and recycling."

"The Peterson award is a highly competitive award, presented only every second year," Anette Karlsson, interim chair of mechanical engineering, says. "The award confirms David's very important contributions towards developing an understanding of friction at the nano-scale. His research will have a direct impact on many important engineering applications, ranging from everyday applications to advanced space structures."

ME Professor Receives Multiple Honors from Professional community

Article by Diane Kukich



Thomas S. Buchanan, professor of mechanical engineering and deputy dean in the College of Engineering at the University of Delaware, has been elected a fellow of two professional societies: the American Institute for Medical & Biological Engineering (AIMBE) and the American Congress of Sports Medicine (ACSM).

AIMBE was founded in 1991 to establish a clear identity for the field of medical and biological engineering. The organization's College of Fellows consists of 1,000 accomplished individuals from academia, industry, and government who "have distinguished themselves through their contributions to public health in research, industrial practice, education and innovation."

ACSM promotes and integrates scientific research, education, and practical applications of sports medicine and exercise science. The largest sports medicine and exercise science organization in the world, ACSM was founded in 1954 and now has more than 20,000 members.

Buchanan also recently won two national awards--the Innovation in Research Award from ACSM and the DelSys Award for Innovation in EMG (electromyography) Research from the American Society of Biomechanics (ASB). The awards were both based on published conference papers, one co-authored with assistant professor of mechanical engineering Kurt Manal and the other with graduate student Qi Shao.

In addition to these honors and awards, Buchanan has been named president elect of the ASB and will take over as president in 2009. The current ASB president is another UD faculty member, Irene Davis, professor of physical therapy.

"The University of Delaware is becoming the hot place to study biomechanics," Buchanan says, "largely because of the unique collaboration between engineering and physical therapy here. It's truly a great symbiotic relationship, with both sides providing a critical perspective on the solution of clinical problems."

Buchanan's research interests include muscle coordination modeling, medical imaging, knee stability and osteoarthritis, and kinetic and EMG patterns after ACL injury. He earned his Ph.D. in theoretical and applied mechanics from Northwestern University. Buchanan served as chair of the Department of Mechanical Engineering from 2004 to 2008. He is a fellow of the American Society of Mechanical Engineers and was the recipient of the E. A. Trabant Award for Women's Equity earlier this year.

NIH Grant To Support Treatment of Gait Disorders

Article by Diane Kukich

A multidisciplinary research team from the Departments of Mechanical Engineering and Physical Therapy has been awarded a five-year grant from the National Institutes of Health (NIH) to continue a study on the treatment of movement disorders. The grant was awarded under NIH's Bioengineering Research Partnerships (BRP) program.

Led by Sunil Agrawal, Professor of Mechanical Engineering, the team includes John Scholz, Professor of Physical Therapy; Stuart Binder-Macleod, Edward L. Ratledge Professor of Physical Therapy; and Jill Higginson, Assistant Professor of Mechanical Engineering.

The \$3-million project will focus on developing and testing novel rehabilitation solutions, including un-motorized and motorized exoskeletons for gait training of stroke and other motor-impaired patients.

Agrawal emphasizes the extent of the problem: "Some 700,000 people suffer strokes every year," he says, "and there are already two to three million survivors suffering the after-effects of stroke."

"It has a big impact on a person's life," adds Scholz. "Stroke not only affects many aspects of daily living but also can trigger further problems—for example, bad balance can lead to falls and broken hips. Improved emergency care has led to more stroke victims being saved, but many are severely impaired."

The initial BRP grant, awarded in 2002 and led by Thomas Buchanan, enabled the researchers to develop robotic prototypes and demonstrate the feasibility of the treatment approach through limited testing with human subjects. Significant progress was also made in the development of biomechanical models to predict muscle

deficiencies during normal and abnormal gait.

"The competitively renewed grant will focus on new developments in robotic exoskeletons, embedded with a variety of position and force sensors to enable further testing," Agrawal says, "as well as modification of the two robotic exoskeletal devices developed during the initial research."

The first is a simple un-motorized device, known as a gravity-balancing orthosis (GBO), which increases range of motion in impaired individuals by removing gravity from the joints. The second, an active leg exoskeleton (ALEX), is equipped with servo-motors and a controller to apply forces on the leg to not only improve its motion but also maximize learning, or retraining of the brain.

The researchers will test these devices with additional features and

functionality, including functional electrical stimulation (FES) and motorized control of the ankle. They will also compare the GBO and ALEX with a traditional gait training approach known as *body-weight-supported treadmill training*. The subject pool for the new

study will consist of 30 stroke patients.

A third aspect of the new project is to use gait analysis, biomechanics, FES models, and sensors on the exoskeleton to develop a screening tool for use in determining whether a subject's gait can be improved.

"There is growing awareness that new technologies can make a major contribution to quality of life," Scholz says. "Stroke centers are very interested in these devices and would provide an excellent setting for further testing on larger numbers of people."

Thostenson Awarded Air Force Young Investigator Grant

Article by Diane Kukich

Erik Thostenson, assistant professor of mechanical engineering, is among just 39 scientists and engineers throughout the country selected to receive three-year research grants from the Air Force Office of Scientific Research (AFOSR) Young Investigator Research Program. The 39 awards total \$12.1 million.

The Young Investigator Research Program, or YIP, is open to scientists and engineers at research institutions across the U.S. who have earned a doctorate within the past five years and show "exceptional ability and promise for conducting basic research."

YIP is aimed at fostering creative basic research in science and

engineering and enhancing early career development of outstanding young investigators. Areas of interest include aerospace, chemical and material sciences; physics and electronics; and mathematics, information and life sciences.

Thostenson will study novel micro- and nano-structured composites for sensing and actuation.

"The emergence of nanotechnology has enabled new material systems where structural and functional properties can be tailored," he says. He plans to develop novel composite sensors and actuators with enhanced functional properties by tailoring the actuator structure at the micro and nano scales.



Barry Seidel



Professor Barry Seidel may have retired in 1992, but he hasn't had time to get bored. He's too busy learning Hebrew, perfecting the art of artisan bread-making, and cooking—especially vegetarian meals. Seidel also regularly rides his bike to campus from his home in a neighborhood adjoining the UD campus, most often to pick up materials at the library.

He has studied Hebrew for the past 20 years, taking lessons both online

and with an instructor at UD. "The lessons always leave me simultaneously exhausted and refreshed," he says. "The slogan for one of the online schools is 'When you're studying Hebrew, you're studying more than a language.' That's how it is for me."

He also finds bread-making very satisfying and laments the loss of good bread as pre-packaged items have replaced homemade and bakery-supplied products. "It's taken me awhile," he says, "but I think mine equals any that you can get in Philadelphia or New York."

Seidel joined the UD-ME faculty in 1959 after earning a bachelor's degree at Delaware and master's and doctoral degrees at the Massachusetts Institute of Technology. His first teacher at MIT was John Nash, a Nobel laureate known for his mathematical brilliance and his battle with schizophrenia. Nash was the subject of the movie *A Beautiful Mind*. "My impression of him then was that he was a brilliant person," Seidel says, "and that was before he became famous and won the Nobel Prize. I had the idea that he must know everything."

Even though he has been out of the

classroom for 16 years, Seidel still has strong feelings about education and the role of the university in teaching students. In 1964, he submitted an opinion piece, "Reflections on Higher Education," to a publication called *About Teaching*. He posited that the job of faculty should go beyond transmitting classroom material and should encompass the inculcation of human values in students.

"What can make a difference," he wrote, "is a frequent, not to say, continuous, flow of individual, thoughtful compassionate actions taken by the university community, especially the faculty. Students see these examples and learn. Nothing can substitute, in this matter, for teaching by example."

Seidel still feels this way and sees a disquieting trend toward a student body that is increasingly unprepared to form a world view. He quotes Niels Bohr in saying "Every valuable human being must be a radical and a rebel, for what he must aim at is to make things better than they are."

Born in Philadelphia, Seidel grew up in Wilmington, Del., and he attended P.S. DuPont High School.

Professor Emeritus Maurice Young Dies

Maurice Isaac Young, Professor Emeritus of Mechanical Engineering at the University of Delaware, died at the age of 81 on November 3, 2008. Young joined the UD faculty in 1968 and retired in 1988. The key person who taught dynamics during those years, he joined UD-ME after a career in industry.

Young is survived by his wife, Eleanor, three children (Rochelle Pryor, Gerald Young, and Rosalind Young), and six grandchildren. All three of his children graduated from UD engineering programs: Rochelle (BChE76), Gerald (BChE79), and Rosalind (BME80).

Jack Vinson remembers Young as being not only an excellent engineer but also very interested in philosophy and the arts. His son, Gerald, confirmed this in a tribute to Young, describing him as a man who was “incessantly driven to acquire, analyze, integrate and spread information from science, engineering, literature, politics, history and art.”

“He read voraciously and stored amazingly organized sets of data about the great men of the world from the Emperors of China to the heroes of the Revolutionary war,” says Gerald. “He knew these men Locke, Franklin, Jefferson, Madison, and Hamilton as if they had just come over to chat for the afternoon.”

Mike Keefe recalls that “Maury,” as he was known, was definitely “old school” as far as being a professor was concerned. “He demanded a certain respect from the students,” Keefe says. “He was the professor, the one with the knowledge, the expert.

Once the bell rang, class was NOT to be interrupted—he closed the door and woe to the unwarned neophyte-student who dared to knock and try to come in late!”

But Keefe also remembers Young as being open and responsive to those students who showed that they were conscientious and cared about the material. “Maury was a considerate colleague as well,” Keefe says. “He was very helpful to me when I took over that dynamics class.”

The one thing that impressed ME Professor Emeritus James Danberg about Young was his use of viewgraphs in his lectures. “We all used them from time to time to present some complicated figure or concept,” Danberg says, “but he put his notes for entire lectures on them. He would have loved Power Point because he must have had a considerable stack of transparencies after 14 weeks of classes.”

Tsu-Wei Chou communicated by letter with Young after his retirement 20 years ago. “We reminisced about the good times we enjoyed together at UD,” Chou says. “Besides being a wonderful friend, I respected him as a scholar of the highest caliber. His tremendous knowledge of science, engineering and history always made our numerous lunches together a most enjoyable experience for me. In one of the postcards he sent me, Maury mentioned that in a ten-year period after retirement he read about a thousand books! If I may borrow the words from Gerald’s tribute to his dad, it is the ‘uncompromising commitment to excellence’ that he demonstrated as a scholar and teacher for which



I remember and respect Maury the most.”

On a lighter note, Keefe adds a final anecdote to show that even this serious, old-school professor had a sense of humor: “Prior to coming to UD, Maury had worked for Boeing on their helicopters and the dynamics of helicopters. I remember once he and I were talking, and somehow the subjects of helicopters and riding in a helicopter arose; he told me very seriously how well he understood the dynamics and aerodynamics of a helicopter, and then, after a pregnant pause, he said that was the reason he would never ride in one!”

A graveside service with military honors was held for Young on Thursday, Nov. 6, at the Albert G. Horton veteran’s cemetery in Newport News, Virginia.

College Announces Administrative Changes

The College of Engineering announced a number of new administrative appointments, effective July 1:

Michael Chajes, Professor in the Department of Civil and Environmental Engineering, was appointed Dean. Chajes had served as Interim Dean since October 2007, when former Dean Eric Kaler left UD to accept a position as provost and senior vice president for academic affairs at Stony Brook University.

Thomas Buchanan, Professor and former Chair of Mechanical Engineering, was named Deputy Dean.

Marty Parsons, former Finance Director at the University of Alaska-Fairbanks, was appointed Assistant Dean for Finance and Administration.

Armand Battisti, former Deputy Director of Development and Director of Leadership Gifts at Winterthur Museum & Country Estate, was named Director of Development.

Diane Kukich, former Research Administrator in the UD Center for Innovative Bridge Engineering, was appointed Communications Specialist.

David Kmiec, former Graduate Instructor of Writing Studies at the University of Minnesota-Twin Cities, was appointed Instructor of Writing.

Student News

Mechanical Engineering Seniors Deliver Final Design Presentations

Article by Diane Kukich



Team Terumo - Thomas Craig, Katelyn Staley, Chase Ross, Ronit Lilu, Michael Giuliano

Sixteen teams of senior design students delivered final presentations on their semester-long projects at Clayton Hall on December 12 to an audience of sponsors, review panelists, faculty, staff, students, and parents.

All of the projects address real industrial problems posed by sponsors, with this year's work ranging from development of a tepid-water safety shower system to design of a low-cost photovoltaic module mounting system. The reviewers consider three criteria in their assessment: design synthesis, resource/project management, and communication.

The senior design class is advised and coordinated by Nate Cloud, a 1964 UD ME grad, and professors James Glancey, Robert Hartman, and Michael Keefe.

Review panelists included 1965 alum Peter Cloud, former president and general manager of several of Astra Zeneca's Specialty Chemical Businesses; Scott Davidson, President of MechPro Engineering; Bill Fagerstrom, independent consultant and instructor of the manufacturing course in ME at UD; Ed Gargiulo, senior staff engineer with Siemens Healthcare Diagnostics; Ken Paulsell, former mechanical systems development manager at DuPont; Peter

Popper, former researcher with DuPont and now vice president of Peacock Sales; and Shawn Riley, who earned bachelor's and master's degrees at UD in 1998 and 2001, respectively, and is now an engineering associate with Gore Filtration Products.

Pete Cloud was impressed with what the students do in senior design compared to the projects his class completed 43 years ago. "The scope is up by a factor of ten," he said. "I think that's largely because of the industrial involvement we have now, which gives students a tremendous idea of what their jobs will be like. They have patents and job offers before they even graduate. They also get a good idea of what it's like to deal with organizational bureaucracy. It's not always a straight path from R&D to production."

Riley, who entered the workplace just ten years ago, observed that the biggest difference between then and now lies in the tools. "We didn't get into such complex designs when I was in senior design," he said. "The software available now enables students to get immediate feedback as to whether their design will work or fail."

Machinist Steve Beard, who helps many of the senior design teams create

prototypes, attends the ME senior design presentations every year to see all of the work come to fruition. "This is my first chance to see the actual products instead of just parts of them," he said. "I really enjoy working with the students – they're very bright and highly motivated."

For Nate Cloud, the biggest challenge as the number of students in the class grows each year is getting enough projects. "It will be tough in this economic climate," he said, "but I continue to be amazed at the students and what they accomplish – they get better every year."

The following companies sponsored projects in the 2008 program:

- Air Liquide – development of a process to automate a flow-setting machine
- CNH America – development of an improved protective curtain for disc mowers
- GE Energy – design of a low-cost frameless photovoltaic module mounting system for large-scale PV systems
- George Products – improvement of the design, functionality, and machine capabilities of the company's Optical Automatic Smart Inspection System (Oasis)
- ILC Dover – design, development, and fabrication of a buckle loading machine for production of the M40 Gas Mask
- John Crane – development of a mobile workstation for use in repairing large mechanical seals
- NER Data – design and development of a cold-aisle containment system for data centers
- Schiller-Pfeiffer – design, development, and fabrication of a novel transmission design that can be used with a variety of engines
- Scientific Products – development of a cost-effective way to measure particle suspensions using a fluid cell coupled to the company's pump systems
- Siemens – analysis and improvement

of a sealing system

- Southco – design and demonstration of a system to measure friction and wear characteristics of friction hinge devices
- Speakman – development of a tepid-water safety shower system
- Super Critical Fluids – development of a new and innovative way to deliver bulk liquid carbon dioxide to the company's equipment.

- Service Engineering – improvement of the set-up and use of the company's iGPS laser-based metrology system vector bar
- Terumo Cardiovascular Systems – improvement of the production line that delivers the company's Capiox oxygenator, a life-sustaining device that serves as the lungs during open heart surgery.
- W.L. Gore – design and fabrication of

a roll re-winder system.

The Terumo team--consisting of Thomas Craig, Michael Giuliano, Ronit Lilu, Chase Ross, and Katelyn Staley--ultimately won top honors but not without serious competition from the fifteen other teams. "All of the teams received very high evaluations this year," said Nate Cloud, "but the Terumo project was selected number one by a close margin over the others."

Student Profile: Anne Martin



Anne Martin's parents are both electrical engineers, but rather than following in their footsteps, she chose mechanical engineering, based on her

enjoyment of her high school physics classes. A native of Newark, Delaware, Martin was also interested in computer science and elementary education. She chose the University of Delaware because it was one of the few schools she looked at that had good programs in all three areas.

ME proved to be a good fit for Martin, who is one of the top students in the ME class of 2009. "The ME's are all really friendly and helpful to each other," she says.

Despite its challenging reputation, senior design was a good experience for Martin. "I liked it even though it was a lot of work," she says. "Not all schools have programs as good as Delaware's, and it really gives us a great opportunity to work with industry." Martin was a member of the team sponsored by John Crane, charged with development of a

mobile workstation for use in repairing large mechanical seals.

Despite the demands of the ME curriculum and senior design, Martin managed to find time to participate on the Collegiate Figure Skating Team, a club sport that competes with other schools in the region. She skates five days a week and finished second at the national competition in Ann Arbor, Michigan, in December 2008. She is also a member of the Intersvarsity Christian Fellowship.

Martin plans to go to graduate school and has narrowed her choices to Ohio State, Notre Dame, Georgia Tech, and Worcester Polytech. She is still unsure as to whether she will stop with a master's degree or continue on for the PhD and is also undecided about a career in industry or one in academia.

But whatever her choices, there is no doubt that Anne Martin will succeed.

ME Grad Student Spends Time at German Aerospace Center



Mercedes Hernandez, a PhD student working in Anette Karlsson's Computational Mechanics of Materials and Structures Research Group, had the opportunity to spend several weeks at the German Aerospace Center (DLR) in the summer of 2008.

One of the current thrusts of Karlsson's research group is failure prediction and durability of multilayered thermomechanical structures used for aerospace

applications, such as thermal barrier coatings (TBCs). The work is being conducted with a range of collaborators, including DLR. Hernandez's visit, supported by the NSF-funded Materials World Network, enabled her to gain valuable experimental training, conduct interdisciplinary research, and lay the groundwork for future projects.

Hernandez, who earned her bachelor's degree in mechanical engineering from the Simon Bolivar University in Caracas, Venezuela, is doing her thesis research on the development of combined experimental and numerical techniques for accelerated testing and life prediction of multilayered material systems.

"The three months visit as a

guest scientist at DLR was an enriching experience for both my professional career and my personal life," Hernandez says. "From a career development point of view, I got involved with state-of-the-art experimental techniques for processing and testing TBC systems. I was also able to receive training on novel equipment available at the research center for sample preparation and imaging techniques."

"Certainly, the opportunity to learn about the experimental techniques that are being used in my field was a perfect complement to the computational mechanics work that I have been conducting during my PhD program," she adds. "My visit to DLR also allowed me to develop a global perspective."

Alumni News

New Development Officer Joins the College of Engineering

Dear ME Alumni

Hello! My name is Armand Battisti and I am your new Director of Development for Engineering. I am a 16-year resident of Delaware (originally



from New York state), having received my BS in Biology & Environmental Sciences from Elmira College and my MPS in Community Services Administration from Alfred University. For the past 29 years I have worked to advance important causes through fund raising at Winterthur Museum, West Chester University and Saint Joseph's University. In many ways, my position here is one that I know quite well, except that I don't know all of you. I am delighted to be here to work with Dean Chajes and help find the resources that will enable the College of Engineering to move ahead.

Every day I learn something new about our cutting-edge research or meet faculty who are working on seriously important national issues. You might say I'm being "wowed" on a regular basis! I fully expect that as we spread the word about all the great accomplishments here we'll raise the College's profile and receive greater financial support, not just to train future engineers but to find solutions to world problems in the fields of energy, materials, and health to name a few.

My most immediate objective is to engage with alumni and friends and promote the need for broad-based financial support. President Harker

has made it clear that the University is well-positioned to take a major step into the national spotlight. Of course, the College of Engineering can and should be an early leader in making that transition. Soon you may have a chance to meet the Dean and me in our travels around the country. The College has its own list of objectives for the future and we feel it is important to have your thoughts on those plans. You are invited to read the latest draft on the College of Engineering website.

Meeting the needs of the future will hinge upon substantial growth in voluntary giving. I hope that you will follow our progress and that you will be an advocate, a volunteer and an annual contributor to the cause. There is no more validating argument to be made to prospective corporate and foundation donors than a high degree of alumni participation. So at this time if you have not made your annual gift to the Mechanical Engineering department or program of your choice, I strongly encourage you to do so!

If at any time in the future I can be of assistance, please let me know. I am at 302.831.7273 or via email at aab@udel.edu. Thanks very much.

Benjamin Herring Scholarship Award

I was asked by Nate Cloud to write about a topic of interest to ME graduates. Here's a short story about one of your fellow alumni, recently deceased, who planned for the College's well-being through his estate.

Benjamin Edward Herring graduated from the Mechanical Engineering program in 1950. He grew up in the coal regions of Pennsylvania. His family had supported his plan to attend college one day and for reasons unknown, it was his wish to become an Engineer through the University of Delaware program. But before he could enroll, there was a much higher national priority: World War II. So following high school graduation he joined the Army Air Corp and became a B-25 pilot in the Pacific theater, completing three years service in 1946. Finally Benjamin enrolled at Delaware

and was amongst a number of veterans pursuing an education into their early 30s.

We don't have much career information on Mr. Herring except that we know he was a self-employed mechanical engineer in the chemical industry. He was a continuous member of the American Society of Engineers until his retirement in 1973, and when he and his wife relocated to Sun City, Arizona.

According to University development staff who spoke with him in his latter years, Benjamin had very fond

memories of his teachers and kept in touch with only a few classmates throughout his life. Reportedly, the Herrings visited campus only once following graduation. His recollection was that "a great deal had changed." When he wrote or called he consistently sent greetings by saying "say hi to dear old Delaware." Ben and his wife Betty sent frequent contributions to UD, often designating their gifts directly to the ME department.

The Herrings did not have children; therefore their estate was largely charitable. Benjamin and his wife Betty agreed that the UD College of Engineering would be the principal benefactor of their assets and so through a bequest they left more than \$1.7 million for a permanently

endowed scholarship in Benjamin's name. Their scholarship provides support to undergraduates (with a preference for mechanical engineering) with demonstrated financial need. In this way the Herrings have achieved their goal of providing access to future students beyond their lifetimes.

Benjamin passed away in June, 2007

at their retirement home in Sun City West, Arizona. He was survived by his wife Betty of many years who passed in April of 2008. Mr. Herring was a descendant of the Sons of the American Revolution.

The first recipients of the Benjamin Herring Scholarship have been announced for spring semester 2009.

They are Edward Bonnevie from Lafayette Hill, PA, Sarah Friedrich of Finksburg, MD and Derek Maier of Honeoye Falls, NY. If you would like discuss a charitable gift for the Mechanical Engineering department, please contact Armand Battisti, Director of Development of the College of Engineering at 302.831.7273 or by email: aab@udel.edu

UD Initiates Entrepreneur in Residence Program

Article by Diane Kukich



William Mavity (EG '72) launched the University of Delaware's new Entrepreneur in Residence Program on Thursday, December 4, 2008, with a lunchtime presentation in the composites

building attended by about 100 faculty, students, staff, alumni, and visitors. Later in the day, he held office hours at UD's new Venture Development Center in Purnell Hall for small groups of students seeking advice on their business ideas.

Mavity is President, CEO, and Director of Paracor Medical, Inc., a company that develops device-based treatments for patients suffering from heart failure. He spent the first 21 years of his career with 3M and then became CEO of a succession of smaller companies and spinoffs. Mavity serves on the Advisory Council for the UD College of Engineering.

The Entrepreneur in Residence Program is sponsored by UD's Office of Economic Innovation and Partnerships (OEIP). Established in July 2008 and headed by David Weir, former Director of the Delaware Biotechnology Institute, OEIP is working to establish UD as a center of innovation and entrepreneurship by securing resources and encouraging faculty, students, and staff to engage in such initiatives. Weir came to UD after a 35-year career with the DuPont Company.

Mavity offered advice on a range of subjects, from international assignments to raising money for a business venture. "If you ever have the opportunity to

work overseas, I would encourage you to take it," he said. "It can be very frustrating but also very rewarding if you can pull it off."

With regard to attracting support from venture capitalists, Mavity admitted that raising money is not for the faint of heart. Venture capitalists look for three things in identifying projects to support, he said: a good balance between opportunity and risk, the right kind of management team, and a protectable idea.

He encouraged students to pay attention in their classes—even the ones that don't interest them. "I wish I had worked harder in my engineering classes," said Mavity, who followed a business administration track available to engineering students in the 1970s. "I always found the business side easy, but I learned later that you really need to know a little bit about everything and understand at least the basics of every course you take."

Mavity also encouraged young entrepreneurs to follow their passions. "Try to find a company and pursue your idea," he said. You have tremendous resources today to do your research using the Internet. What took me weeks in the library 20 years ago, you can do in just a few hours now."

Carl Jarvis, who owns a small consulting firm, attended the talk with several ME alums from Siemens Healthcare Diagnostics, Inc. "What we heard in this one-hour talk took me a year-and-a-half to learn on my own," Jarvis said. "Mr. Mavity had really good insight into entrepreneurship."

Gaurav Nilakantan, a PhD student in materials science who works at UD's Center for Composite Materials, met with Mavity one-on-one after the talk.

"He gave me keen insight into what it takes to convert an idea into a

competitive and successful enterprise," Nilakantan said. "As graduate students in engineering, we develop very strong technical and analytical skills as part of our curriculum, which is the starting point for conceptualizing a good idea, but after listening to Mr. Mavity, I realized that strong business acumen is just as vital to starting or running a successful company based on that idea."

Francois Chaubard, a junior mechanical engineering major, also met with Mavity during office hours. "This was definitely a learning experience," he said. "You think you understand how companies are bought and sold, but you realize it's a lot more complicated when you hear about it from someone who's actually done it."

Following the office hours session, Mavity was honored at a brief ceremony, where a permanent plaque with his name at the top was unveiled by UD Executive Vice President Scott Douglass. "When Patrick Harker arrived here as president a year ago, the thing that surprised me the least was his focus on entrepreneurship and innovation and on the tie between the academic world and the real one," Douglass said. "I want to thank you for being the first Entrepreneur in Residence. You are a great start to the program."

According to Weir, OEIP plans to bring in two or three successful alums each semester through the Entrepreneur in Residence Program. "We're partnering with the departments and colleges to offer educational programs and internship opportunities," he said. "We're also planning to hold a forum on April 24, 2009, at Clayton Hall."

"Our goal is to stimulate innovation and entrepreneurship across campus," Weir added. "We would ultimately like to see undergraduates leave here with small businesses already started."

ME to Hold Fifth Careers Conference

Plans are well underway for the Fifth Annual ME Careers Celebration and Conference, to be held at Clayton Hall on Friday, May 1, 2009.

“It’s a great milestone to be marking five years of this event,” says coordinator Nate Cloud (’64). “Over the years, we’ve seen a big increase in student participation, which is great because they’re the alumni of the future.”

Cloud and the event planning committee are urging faculty, students, and alumni to come out for the event, as it represents a great opportunity for them to share knowledge, network, and reconnect.

The program, which was being

finalized as this issue of *ME News* went to press, will include presentations by faculty, students, and alumni in a dual-track format; networking breaks; talks by the 2009 class of Distinguished Career Alumni (see article on p. 13); and a keynote talk by Prof. John Byrne, Director of UD’s Center for Energy and Environmental Policy (CEEP).

“John Byrne’s talk will touch on some very timely topics,” says Cloud. “He’ll share with the audience new directions and issues in energy and environmental policy. His talk will also complement Prof. Ajay Prasad’s presentation on the groundbreaking clean energy research ongoing at the University.”

Cloud urges alumni to visit www.udconnection.com, the University of Delaware’s online alumni community, which enables them to network with each other via email, post and view class notes, get the latest UD news, and stay involved with UD. They can also contact Cloud (cloudn@udel.edu), who will facilitate alumni in reconnecting. “We want to see alumni participate because they have a great deal to share with our current students in terms of their career experiences,” Cloud says.

“We just really want to get the message out there to everyone—faculty, students, and alumni—that they should plan to come to this event,” Cloud says. “It just gets better every year.”

Career Conference Agenda

12:00 Registration (Main Lobby) – Refreshments and Displays, Live Demo Planned!

1:00 Seminars - Track A or Track B

Track A - Room 119

“Innovation”

Dr. E. Fenton Carey, Jr. – ’67
Consultant on Global
Leadership and Innovation

Track B - 120

“Forensic Engineering”

Dr. Michael H. Santare - Professor
Dept. of Mechanical Engineering
University of Delaware

1:45 Refreshments (Main Lobby) – Refreshments and Displays

2:00 To Be Announced - Alumni Speaker

“New Initiatives in

Sustainable Energy at UD”
Dr. Ajay K. Prasad - Professor
Dept. of Mechanical Engineering
University of Delaware

2:45 Refreshments (Main Lobby) – Refreshments and Displays

3:00 Senior Design Projects Presentations
from two Senior Design Teams

Senior Design Projects Presentations
from two Senior Design Teams

3:45 Senior Design Presentations (Main Lobby)
Networking & Refreshments Displays, Discussions and Presentations with all 2008-2009 Senior Design Teams

4:30 Welcome from The Department of Mechanical Engineering (Room 128)
Dr. Anette Karlsson - Associate Professor & Department Interim Chair

4:45 Distinguished Career Alumni Presentations (Room 128)

5:30 Panel Discussion with Distinguished Career Alumni (Room 128)

6:15 Keynote Speaker (Room 128)
“Climate Change” - Dr. John Byrne – Nobel Prize Winner UD Center for Energy and Environmental Policy

7:00 Social/Networking Buffet Dinner (Main Lobby)

8:00 Adjourn

2009 Distinguished Career Alums Selected

Five distinguished alumni will be honored at the Mechanical Engineering Business & Career Conference, to be held on April 24, 2009: E. Fenton Carey, John W. Gillespie Jr., E. Douglas Huggard, James Laser, and Eric Svendsen. Alumni are selected for recognition based on several criteria, including achievement, impact, uniqueness, and interest.

“As with those honored during the past four years, we continue to be impressed with the breadth of the careers and the credentials of our award recipients,” says planning committee member Bill Wagamon ('62). “This year’s selection includes graduates of the University of Delaware ME program during a fifteen year span beginning in the mid-50’s. Many have advanced mechanical engineering degrees, and two are licensed professional engineers.”

“Highlights of their various careers include living abroad while managing their company’s international operations, working with the Federal Aviation Authority and military, forming consulting companies focused on global leadership, achieving national ranking as a marathon runner, active community and industry involvement, serving as Chairman & CEO, and directing a cutting-edge research group at the university, just to name a few.”

The following highlights the careers of this year’s distinguished alumni.

E. Fenton Carey, Jr. ('67, '70M),



who currently runs his own consulting business, has been a national policy maker in the areas of defense, energy, transportation, and the environment. A former Navy Captain and naval aviator who did combat duty, Carey holds

a Ph.D. in aeronautical engineering from the Naval Postgraduate School in Monterey, California, in addition to bachelor’s and master’s degrees from Delaware. He has won awards for superior achievement and service from the U.S. Departments of Defense, Energy, and Transportation as well as the U.S. Navy.

For the past two years, Carey and his former intelligence officer in the Navy have been working to establish a Center for Global Leadership and Innovation with an initial focus on China. “I want to help create an environment that enables people, organizations, nations, and regions of the world to work together to accelerate the generation of new ideas and knowledge,” Carey says, “as well as their transformation into internationally competitive, products, services, processes, business models, and markets quickly and affordably to satisfy their customers.”

This sounds like a tall order, but Carey is not one to back away when he hears the word “impossible.” During the course of his career, he has been told that many things were impossible — including the rapid deployment of weapons systems and the development of a national transportation science and technology strategy — and he has defied the odds.

“I’m known for doing the impossible,” he says, “but only because I have had champions who gave me ‘cover’ and knocked down the barriers. They enabled me to demonstrate that government can operate better, cheaper, faster, and smarter while delivering quality products and services to its customers, the American people.”

A competitive swimmer at UD and later a nationally ranked marathoner, Carey has recently begun swimming in the national master’s program. He has also traveled extensively.

“After being in the Navy, I had traveling in my blood,” he says. “As a result, I have made every effort since to take my family on extended summer vacations, so they have the same opportunity the Navy gave me to learn about America and the world. We have been to Australia and New Zealand, rafted the Colorado

River through the Grand Canyon, gone to a dude ranch in Montana, and toured the Rocky Mountains from New Mexico to Edmonton, Canada. Last summer, we went to China for a month to tour the country and attend the Olympics. It was a trip of a lifetime. Next summer, we are off to visit London, England, and the Baltic capitals.”

Carey feels strongly that students need to be better prepared to work together across professions and traditional organizational boundaries, and he recommends establishment of a required class on innovation in every university.

“Success in life is all about ones ability to create, adapt to, and take advantage of change,” he says.

John W. Gillespie, Jr. ('76, '78M, '85PhD) is Donald C. Phillips Professor



at the University of Delaware and Director of UD’s Center for Composite Materials. An internationally recognized authority in composites, he has led four Centers of Excellence in Composites on processing, mechanics, and performance of multifunctional composite materials, as well as an industrial consortium with more than 60 companies conducting research at the forefront of composites science and engineering.

“ME offered me my first exposure to engineering and composites through class work and senior design,” Gillespie says. “This clearly had an impact on my career as a faculty member. It has been a great honor to work with my colleagues and have the opportunity to continue the tradition of composites research, started in ME and now widespread across campus, as well as advise the next generation of undergraduate and graduate students for industry, government, and academic positions.”

Gillespie has served as a member of the influential National Research Council Board on Manufacturing and Engineering Design, Chair of the National Materials Advisory Board Committee on High-Performance Structural Fibers for Advanced Polymer-Matrix Composites, and Editor of the Journal of Thermoplastic Composite Materials. He also serves on numerous international editorial boards.

Gillespie was awarded the Paul A. Siple Memorial Award in 1998 by the U.S. Army for his research on processing of multifunctional materials and the prestigious Jud Hall Composites Manufacturing Award in 2000 by the Composites Manufacturing Association of the Society of Manufacturing Engineers. Gillespie has co-authored more than 200 journal publications and patents. During his career, he has been a principal or co-principal investigator on more than \$100M in research projects. He has advised 44 master's and 40 Ph.D. students, of whom ten are currently faculty members at other universities and involved more than 100 undergraduates in his research. His research interests include processing-structure-property relationships, interphase and adhesion science, and mechanical properties and durability of composites.

Gillespie's main hobby is sports cars. "What could be more appropriate than the Corvette, which uses lightweight composites," he says.

E. Douglas Huggard ('55, '61M)



spent his entire career with Atlantic Electric, a Utility servicing the southern one-third of New Jersey, and then with Atlantic Energy, a holding company formed in 1987 consisting of four non-regulated energy-related subsidiaries.

Huggard was instrumental in

directing the company into the holding company format, which enabled participation in activities other than regulated areas, such as cogeneration projects, real estate development, conservation projects, and energy-related investment opportunities.

He joined Atlantic Electric as a junior engineer in 1955 and held various engineering, operational and management positions until becoming a corporate officer in 1974. He was elected President & Chief Operating Officer and Director in 1984, Chief Executive Officer in 1985, and Chairman of the Board & Chief Executive Officer in 1989. Huggard then served as Director of four Atlantic Energy, Inc. subsidiaries from 1987 to 1993. He retired from active employment in April 1993, continuing as Chairman of the Board, and then retired from the Board of Directors in April 1996.

"One of the highlights of my long operational career with Atlantic Electric occurred during the major power blackout in the northeastern U.S. in 1965," Huggard recalls. "My company assigned me to investigate the series of events that led to the failures experienced by all of the other utilities and why Atlantic Electric was able to maintain electric service during this event. My report was accepted by the Federal Power Commission and incorporated into their final report of the cause and effect of one of the biggest power outages in the history of our nation."

Huggard is also credited with designing an acceptance test for major new steam generating units located at Atlantic's B. L. England Generating Station. "This entailed adhering to ASME test procedures and submitting a comprehensive report that would be the basis of the acceptance of the work done by the contractors to meet the specifications," he says. "My final report became the basis for Atlantic Electric's challenge to the major engineering construction corporation because it was concluded that the unit did not meet design specifications."

In addition to his industrial career, Huggard was an Engineering Officer in the U.S. Navy, serving on active duty from 1956 to 1959 and reserve from 1960 to 1985. He was awarded four commands and retired with the rank of Captain.

A lifelong resident of Wilmington, Delaware, Huggard now lives in Ft. Myers, Florida. He has six children and 15 grandchildren.

Jim Laser ('69) is currently self-



employed as a consultant, primarily to the pharmaceutical and biotech industries. Before establishing Whitney Consulting in 2002, Jim spent 28 years with Merck & Co. Inc., where he held increasingly responsible positions in operations, materials management, engineering and technical services in the manufacture of pharmaceutical and biological products. His last position at Merck was Vice President of Vaccine and Sterile Operations.

Laser, whose bachelor's degree is in mechanical engineering administration, feels that he benefitted greatly from the breadth of the curriculum, which offered him problem-solving skills in engineering complemented by business administration knowledge.

A resident of Doylestown, Penn., Laser is a licensed professional engineer in Pennsylvania and Virginia. He is a member of the Board of Directors of Wave 80 Biosciences, Inc. as well as the Board of the Bucks County Council of the Boy Scouts of America. Additionally, Jim is active in church and other civic organizations in the Central Bucks community.

Laser played football at UD where he was an all-conference center in his senior year. He had such a good experience that in 2004, he endowed a scholarship for an athlete majoring in engineering. The first Jim Laser Scholarship was awarded in 2005.

"The scholarship has been very important to me," Laser says. "So far,

we have found two excellent recipients, Kyle Campbell and Kervin Michaud. They are both willing to work hard to succeed in both engineering and athletics. I'm looking forward to the College of Engineering finding another good candidate for next year."

Eric Svendsen ('71) is CEO of Foster



Wheeler Energia in Madrid, Spain and CEO for Foster Wheeler Global Industrial Boilers, providing leadership of the Spanish office of Foster Wheeler

as well as worldwide industrial boiler products for Foster Wheeler Global. "My career path began with practical knowledge and hands-on learning as a commissioning start-up engineer traveling the world for Foster Wheeler," Svendsen says. "The multicultural experiences I gained working in at least 12 different countries had a direct impact on my career while also serving to provide me with valuable technical knowledge."

Svendsen admits that becoming fluent in Spanish was one of his greatest challenges, but it was also what paved the way for his appointment as CEO of the Spanish operation within the company. He is proud of having made a difference in the world through projects focusing on reducing harmful emissions and improving the environment.

"The education I received during my years at the U of D provided a strong technical basis from which I could make appropriate decisions, especially during my early employment years," Svendsen says, "yet it also provided a

sense of community within the group of mechanical engineers in my class, whereby we worked together as a team to solve lab problems and complete our senior projects. In the real world, very few things are performed in solitude. Rather, everything is performed in community with your customers, be they internal or external, and must be performed with transparency, with uniformity of purpose, and with accountability."

His advice to current students? "Remember that for every problem there is a solution. Simply look at the problem once, and again, and from different perspectives, and with others. The answer will come to you."

"Be consistent in your work ethic, be open with your work community," he adds, "and be accountable for your work performed."

Svendsen and his wife Ana, a Spanish citizen and naturalized US citizen, were married in Spain in August 1976. They have three children: Hope, a fifth grade teacher; Edward, an insurance manager; and Richard, a college student.

Alumni News Briefs

Stephen Shuler '89 of Wixom, Mich., has been named Chief Technology Officer of Exatec, LLC.

Alex Dee '98 announced the birth of his daughter Danielle Jazmin Dee, June 1, 2008, joining brother Zaiden Jarrett Dee. Alex Dee has been promoted from Director of Engineering and Development to Vice President of Fujikura Composites.

Sylvia Pineda '03 and Wilson Fisher Steele '02 were married on September 1, 2006, and reside in Huntington Beach, Calif. Sylvia is production superintendent for Praxair, Inc. for two air separation plants and one CO₂ plant. Wilson received a master's degree in biomedical engineering from Drexel University in July 2006 and works as a design and manufacturing engineer

for lower limb prosthetics for Freedom Innovations, LLC in Irvine Calif.

Charles McAllister '69, a member of the Corporate Facilities Team of W.L. Gore & Associates Inc., is serving as treasurer of the Council of the Delaware Association of Professional Engineers (DAPE) and as chair of the DAPE Law Enforcement and Ethics Committee. He also reports that his first granddaughter, Carolyn McAllister, was born January 25, 2008.

John R. (Jack) Dick Jr. '48 died at the age of 85. Dick retired from Delmarva Power and Light, where he worked as a plant engineer for 24 years. He was a graduate of Rehoboth High school and the University of Delaware and was a member of the Rehoboth Beach Volunteer Fire Company and St. Mark's Episcopal Church in

Millsboro. He was also a veteran of the U.S. Army. He is survived by his wife of 58 years, Dorothy E. Dick, four children, and five grandchildren. In lieu of flowers, memorial contributions may be made to the Department of Mechanical Engineering, University of Delaware.

Carl W. Hall '50 recently published his thirtieth book entitled *A Biographical Dictionary of People in Engineering*. It was published by the Purdue University Press in 2008, as written in the Tau Beta Pi Bent.

Additionally, Carl received the Lifetime Achievement Award in recognition of outstanding sustained contributions to global research and development. The award was given at the International Drying Symposium held in Hyderabad, India in November 2008.

Alumni Profile

Jennifer Pyle: Mechanical Engineer and Athlete



Jennifer Pyle ('79), Occupational Health Specialist in the University of Delaware's Department of Occupational Health and Safety (OHS), spent years in the manufacturing sector before deciding she wanted to get into the environmental field. The lack of an environmental or ecology degree did not hold her back. "Having my previous skill base of project management, trouble shooting, and personnel management served me well for this career change," she says.

Pyle's work sites have ranged from a packaging line for General Foods' JELL-O brand gelatin to a lamination line for W.L. Gore's high-tech XCR material. She has also conducted research on food preservation and preparation methods, as well as managed and overseen underground storage tank removals and installations. Her current job at UD involves working with a variety of building systems, equipment, and contractors to manage asbestos and lead-based paint in older campus buildings.

"My engineering background has been beneficial for this work," she says. "I was never great at drawing blueprints, but I could certainly read them! Amazingly I must have learned something in that freshman drawing class way back when. I have since taken a CAD class and managed to remember the drawing terms from freshman year and produce some basic CAD drawing."

"Although I'm not a rocket scientist," she continues, "I've stuck to the skills I'm good at, which include project management, working with contractors, and providing services to internal and external clients. My engineering education has been a huge asset for this."

The things that Pyle is "good at" go way beyond engineering. She is an accomplished athlete who learned as an undergraduate how to juggle multiple

priorities. At UD, she played intercollegiate field hockey and lacrosse from 1975 to 1979 while majoring in mechanical engineering.

"Imagine going to a freshman mechanical drawing class without ever having taken a drawing class in high school," Pyle says. "There were about 40 students and not much time for the professor to provide one-on-one help."

"After much cajoling of one professor," she recalls, "I took a final exam verbally before the actual exam date, since the field hockey team had qualified for the national tournament and I would miss the final exam date (or miss the tournament altogether!). I passed the exam, and we went on to place fourth in the nation for the AIAW tournament. I believe Student Services for Athletes helps with these issues now."

That was just the start of Pyle's passion for and participation in sports. She is a competitive bicyclist and triathlete, and she and her husband, Bruce, spend their spare time cycling, hiking, kayaking, canoeing, backpacking, snowshoeing, fishing, and hunting. For her birthday last year, Bruce arranged for Jennifer to skydive in Utah. "It was awesome," she says. "Talk about an adrenaline rush...."

Throughout her career, Pyle has found that being an engineer has opened doors for her. Her advice to students: "Take some fun elective courses, and during those times at 3:00 a.m., when you're studying for a class that you're not particularly fond of, just stick with it. Get that engineering degree—it opens many doors in many different fields of work."



Alumni Support-Thanks!

Mechanical Engineering Alumni Donors to the University of Delaware in Fiscal Year 2008 (listed alphabetically in each gift category); and Other Friends contributing to the Mechanical Engineering Department. Those designating gifts to the ME department are highlighted.

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David R. Helwig	'73	
\$5,000 - \$10,999		
James R. Laser	'69	
William G. Mavity	'72	
\$1,000 - \$4,000		
Alex T. Bourdon	'80	
W. Douglas Boyce	'62	
Diane Dickerson Boyce		
W. Murray Campbell	'50	
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Charles H. Collier III	'65	
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John L. Haverstick, Jr.	'69	
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