



Mechanical Engineering News

University of Delaware

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Career Celebration

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Inside: Faculty focus and research • Focus on students and undergraduate education • Alumni • Career Celebration • Outstanding Alumni • Alumni Support

Cheers from the Chair



Dr. Thomas S. Buchanan

This is an exciting time for the Department of Mechanical Engineering. Our students are going on to do great things and we shall be celebrating those accomplishments at our Alumni Careers Celebration Day. We are looking forward to joining our friends and trading old stories in April, as described on page 7. Please join us if you can.

We have two new faculty members who just began and are in the process of hiring three new faculty members this year. These are tremendous opportunities to grow Mechanical Engineering in new and exciting ways at the University of Delaware.

Our two newest faculty members need to be introduced. Dr. Jill Higginson joins us from Stanford University where she did her doctoral work on musculoskeletal biomechanics. Dr. Higginson uses computational models to study the coordination of muscles in people who have had strokes. She is a great addition to our Center for Biomedical Engineering Research, which is described on page 4 of this issue.

Dr. Xinyan Deng is our other new addition to the faculty. She did her doctoral work in robotics at UC Berkeley. Her research focuses on the development of centimeter-scale microrobotic underwater vehicles. These small “robotic fish” have tremendous potential for underwater sensing and we are very pleased to have her join us.

We look forward to a year of growth and renewal as we bring new faculty onboard with great, new ideas. These present terrific opportunities for us to expand both our academic and research activities and challenge our students in new ways.

Thomas S. Buchanan
Chair of Mechanical Engineering

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Editor's Notes

We hope you enjoy this issue of ME News! As you will see, much of it is devoted to our Alumni Career Celebration project. However, on pages 4 and 5, we also highlight the exciting research that is taking place in the Center for Biomedical Engineering Research, targeting the reduction of the impact that disease has on our lives. Two of our current Senior Student leaders, Christine Tate and Jared Wray are highlighted on page 7.

We hope to bring all of these elements (Alumni; Faculty, and Students), together on April 29th, to celebrate your careers, facilitate stronger relationships, and provide career examples for our students.

Planning of the April 29th event is ongoing, and you will be receiving an invitation in the mail in early March. We are looking forward to seeing you on 4/29 to renew acquaintances with classmates, and and enjoy a day of learning and networking at the Alumni Career Celebration.

Nate Cloud '64, ME Alumni Relations Coordinator

Faculty/Staff Highlights



In August of 2004, Mechanical Engineering faculty **Suresh Advani**, **Anette Karlsson**, **Ajay Prasad**, **Mike Santare**, and **Lian Ping Wang** won a Department of Energy grant to do research on fuel cells.

Dr. Anette M. Karlsson organized two mini-symposia at the 2004 ASME International Mechanical Engineering Congress in Anaheim, California, November 13-19, 2004, entitled "Damage and Durability Tolerance of Heterogeneous Material Systems" and "Multifunctional Materials and Materials Systems." Together, these symposia constituted more than 40 presentations.

Dr. Karlsson gave an invited talk at the Special Seminar on Thermal Barrier Coatings for Advanced Gas Turbines at Siemens-Westinghouse in Finspong, Sweden, on October 29, 2004. The talk was entitled "Failure evolution in a class of EB-PVD coated thermal barrier systems."

Dr. Ajay Prasad participated in the Mechanical Engineering Fall Seminar Series on Friday, October 10, 2004. His talk was entitled "The Role Of Mixing and Dispersion in Environmental and Bio Fluid Mechanics."

Dr. Ajay Prasad hosted a meeting of major fuel cell manufacturers and rep-

resentatives of the Federal Transit Administration at Clayton Hall on October 22, 2004, to explore the formation of a consortium to research, develop, and demonstrate a fuel cell powered transit vehicle on the University of Delaware campus.

Dr. Prasad and Laboratory Coordinator **Roger Stahl** recently received a patent for laboratory apparatus under the title "Transient Heat Conduction Using Thermocouples, Thermochromic Liquid Crystals, and Numerical Simulation" (USP No. 6,783,368 B2).

Dr. Kausik Sarkar gave an invited talk at the New Jersey Institute of Technology on September 8, 2004 on "Microbubble Based Ultrasound Contrast Agents." He gave a similar invited talk on the same topic at Boston University on December 10, 2004 and he chaired a session on Microfluids in ASME International Congress on November 14, 2004.



Dr. Sunil Agrawal was the Program Chair for the 2004 ASME Mechanisms and Robotics Conference, which was part of the Design Engineering Technical Conference, in Salt

Lake City, Utah, from September 28 through October 1. A total of 170 technical papers were presented at this conference. One of his technical papers "Biologically Inspired Design of Small Flapping Wing Air Vehicles Using 4-Bar Mechanisms and Quasi-Steady State Aerodynamics," was awarded the Biomimicry Prize at the 2004 Mechanisms and Robotics Conference. The paper was coauthored with his students R. Madangopal and Z. A. Khan.

Dr. Agrawal is the Conference Chair for the 29th ASME Mechanisms and Robotics Conference, part of the

International Design Engineering Technical Conference in Long Beach, California, for the year 2005.

Dr. Agrawal is plenary speaker at the National Conference on Control and Dynamical Systems (NCCDS 2005) organized by Indian Institute of Technology, Bombay, held during January 26-28, 2005.

Dr. Agrawal was elected an ASME Distinguished Lecturer for the years 2004-2007. His lecture is entitled "Biomimesis and Design - Flying Robotic Birds and Robotic Stroke Rehabilitation" (described at <http://www.asme.org/member/dlp.html#agrawal>). He presented this lecture at the University of Washington, Seattle, on January 12 and at Virginia Polytechnic University on January 17, 2005.

Dr. Agrawal was elected a Fellow of ASME in 2004.

Dr. Agrawal was the Chair of the Robotics Technical Panel of the ASME Dynamic Systems and Control Division for the year 2004. He organized eight technical sessions at the ASME IMECE in Anaheim on the theme of robotics in which 40 papers were presented.

Dr. Agrawal's work on "Flapping Wing Robotic Birds" was featured by the Science Channel of the Discovery Networks in their series "TechKnowledge" in March 2004. He was invited to be a speaker in a workshop in Brisbane on "Insect Sensors and Robotics" in August 2004.

Dr. Agrawal published a book, *Differentially Flat Systems*, in the Control Engineering Series of Marcel Dekker in April 2004. This book was coauthored with Prof. Hebertt Sira-Ramirez from Cinvestav, Mexico.

STAFF

The Department announces a new senior secretary, **Lisa Katzmire** as of November 8, 2004.

Dawn Johnson was promoted from Records Analyst to Administrative Coordinator as of July 16, 2004.

Ann Connor was promoted from Senior Secretary to Records Analyst as of September 20, 2004.



Faculty Focus and Research

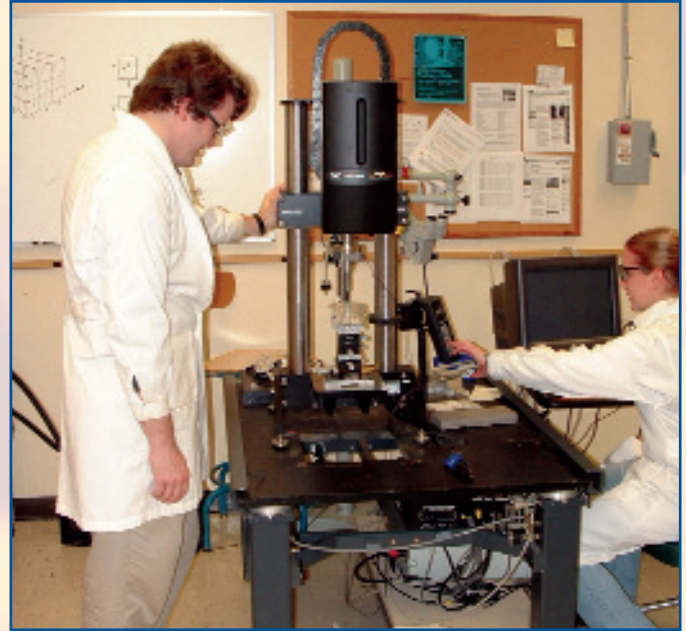
Center for Biomedical Engineering Research (CBER)

by Diane Kukich

Prospective students looking for an academic program in biomedical engineering won't find one at the University of Delaware, but they will find a top-notch research center in this rapidly growing area. The Center for Biomedical Engineering Research (CBER) is an interdisciplinary organization whose mission is to provide engineering science and clinical technology to reduce the impact of disease on the everyday life of individuals.

Graduate as well as undergraduate students benefit tremendously from the breadth and depth of expertise housed within CBER. Most earn their degrees through the Departments of Mechanical Engineering, Health Nutrition & Exercise Sciences, Physical Therapy, or Biological Sciences.

Professor John Novotny (left) and graduate student Christina Turka use an Instron mechanical testing device to measure the mechanical response of articular cartilage to load. The stress and strain results of the experiment are used to characterize changes in mechanical behavior that occur in osteoarthritis. Biological and tissue engineering treatments are investigated to repair the damaged cartilage.



According to Director Kurt Manal, some 30 faculty are affiliated with the Center. While CBER is housed within ME, faculty appointments are in not only the College of Engineering but also the College of Arts and Sciences and the College of Health and Nursing Sciences.

The Center currently is funded at a level of close to \$10M over five years, primarily through two major grants from the National Institutes of Health. Key ME players in these multidisciplinary programs are Profs. Sunil Agrawal, Tom Buchanan, John Novotny, Andras Szeri, Mike Santare, and Kurt Manal.

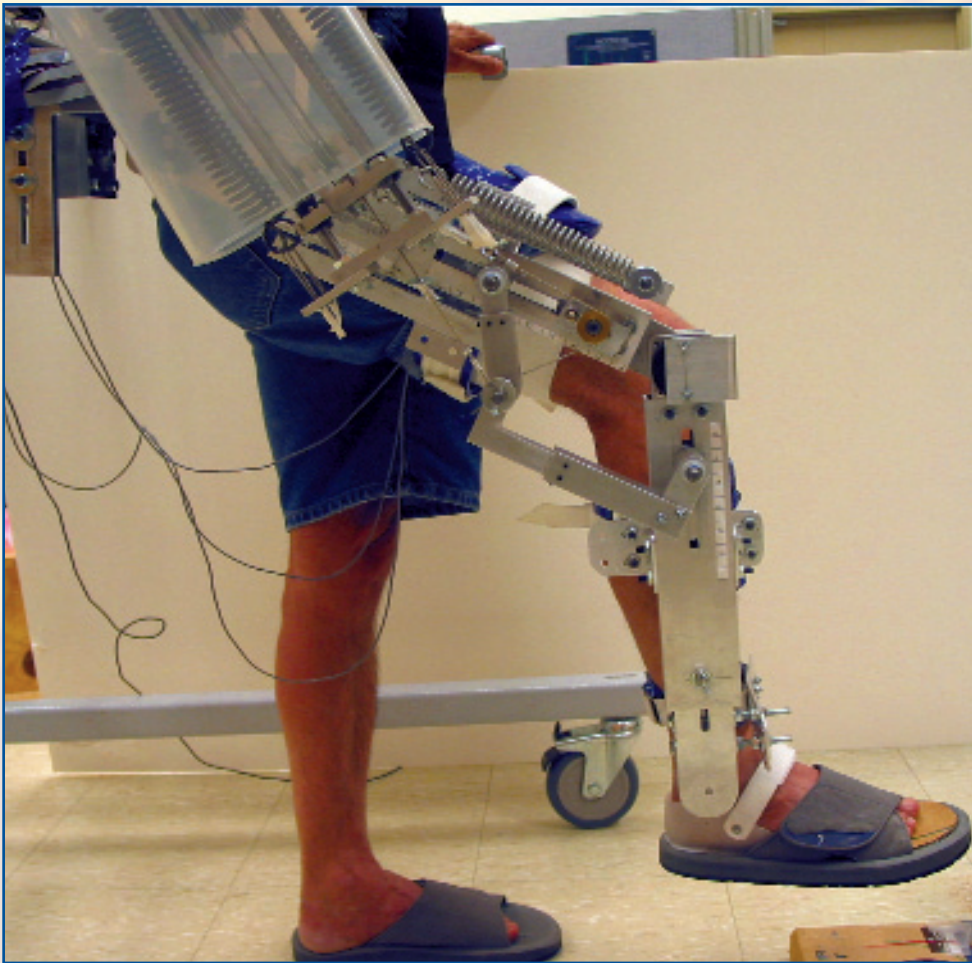
"CBER is very broad," says Manal, "but it's primarily a collaboration between mechanical engineering on the one hand and clinical and rehabilitation applications on the other. Life scientists provide knowledge about biological systems, while researchers in physical therapy supply clinical expertise. This type of collaboration allows us to write broad-based technically sound proposals and carry out effective cross-disciplinary research."

Examples of CBER projects include the development of rehabilitation robots to aid patients with neurological and musculoskeletal impairments, the use of a "virtual arm" for studying neural control, determination of force generation properties in electrically stimulated skeletal muscle, and investigation of airflow problems associated with sleep apnea.

Facilities and equipment include a motion capture lab to enable careful

CBER director Kurt Manal instructs a subject to walk and make contact with the force platform embedded in the walkway. The retro-reflective markers attached to the foot and leg are recorded using high-speed video cameras and combined with measurements from the force platform to estimate joint forces at the ankle, knee and hip.





The gravity balancing leg brace developed by professor Sunil Agrawal and his group members helps individuals following a hemiparetic stroke to walk with improved function. The linkage and springs balance the weight of the leg, effectively eliminating gravity and decreasing the muscular effort required of walking. The novel design allows the mass of the leg to be re-introduced gradually as the subject regains muscle strength.

examination of biomechanics and new imaging methods and software.

In June of 2004, CBER hosted its first research symposium. This one-day event featured 50 presentations from the University of Delaware biomechanics community and a registered attendance of 89 people.

Manal is a research professor in CBER and is also a faculty member in the Biomechanics & Movement Science Program. He earned his bachelor's degree in exercise science at the University of Massachusetts and then completed his master's

degree at McGill University in Canada. He came to UD to earn a Ph.D. in the Biomechanics & Movement Science Program. He stayed on to do a postdoc and then became a research professor here.

Manal's research interests include musculoskeletal modeling, gait analysis, and rehabilitation. He is the inventor of a dental retainer equipped with sensors to enable people with disabilities to control a computer by sliding the tongue over the roof of the mouth.

Manal admits that he was a bit

apprehensive about taking on the position of CBER Director when Buchanan became Department Chair, but he also acknowledges that he knew it was a great opportunity. "It forced me to learn a whole new set of skills," he says, "including handling administrative responsibilities and multi-tasking. Before, I could focus on specific projects that I was directly involved in, but now I have to be aware of everything the Center does."

Contacts

Contact information for faculty/staff features in this newsletter is included below. We urge you to contact these people if you have any questions or would simply like to talk with them about the topics in this newsletter.

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Undergraduate Education

ME seniors showcase engineering solutions

by Martin Mbugua

Photo by Kevin Quinlan

2:52 p.m., Dec. 20, 2004 — A team of four mechanical engineering seniors, who redesigned a recycling container for the Delaware Solid Waste Authority, won top honors at the senior design presentation on Monday, Dec. 13.

The presentations are the results of a required capstone engineering practice course, in which student teams develop real engineering system designs based on specific customer requirements, develop engineering specifications and generate concepts that they can justify. The teams then design, fabricate, assemble, test and improve an actual prototype.

Under the supervision of faculty advisers, the projects are sponsored by businesses or government agencies, which work closely with the student teams throughout the process.

"Some of the units go into production right away. Some of them will go through further testing with the sponsor and some of them, we have learned, might not be good designs to implement," Dick Wilkins, professor of

mechanical engineering and one of the advisers, said.

During the program, 40 students in teams of three and four made presentations on a variety of concepts, from a polyvinyl-alcohol dissolver to a bond-integrity tester and an industrial air-filtration system.

The teams explained their concepts using charts, graphs, slide presentations and, in some cases, working models of the prototype.

Three judges — engineering professionals Kevin Perdue, 1995, Glen Simmonds and Judy Hodgson — awarded points for different aspects of the presentation, including communication, and also asked follow-up questions.

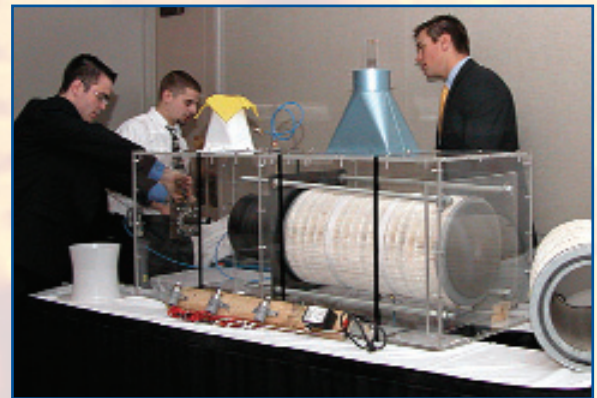
"Being able to communicate is extremely important; you can have the best solution in the world, but, if you can't tell someone what it is, it's worthless," Simmonds said. "The technical content of all the presentations is excellent."

"They are very good," Perdue said. "That's why I keep coming back here. This is my ninth year doing this."

Nate Cloud, '64 EG, the project sponsor coordinator,

said the benefits for a sponsor of a senior design project are intimate awareness of student potential as prospective business associates or partners and uncovering the business potential of an idea that has exciting but undefined potential.

"Other benefits for sponsors include goodwill and additional marketing and exposure with students and the community at large, as well as connection to advanced research and technology at UD," Cloud said.



Teammates (from left) Dante Gabrielli, Anthony Davis and Mike Kutzer check their prototype industrial filtration system in preparation for their presentation at the senior mechanical design competition. Teammate Clifford Cieslak is not shown.

Mechanical Engineering Events 4/29

2/20-2/26	National Engineers Week	5/6
2/21	Last day free add/drop for Spring 2005	5/18
2/22	Order of the Engineer Ring Ceremony	5/19
2/23	Senior Design Appreciation Night	5/20
3/25	Spring Recess	5/21 & 22
4/14	Registration for Fall Semester 2005	5/27
4/14	ASME Distinguished Lecturer	5/28
		5/30

Alumni Career Celebration Day

Honors Day - modified class schedule
Spring 05 Last Day of Classes
Reading Day
Spring 05 Final Exams Begin
Reading Days
Spring 05 Final Exams End
Commencement
Memorial Day - University offices closed

Christine (Chrissy) Tate

by Diane Kukich



Christine (Chrissy) Tate, a graduate of Brandywine High School, was attracted to the University of Delaware because of its proximity to her home

in North Wilmington, its prestigious engineering program, and its exemplary Study Abroad Program.

She chose mechanical engineering as her major because it allowed her to combine her two favorite subjects—math and physics. “Even when I was really young,” she says, “I always excelled in math. I remember being in second grade, and the teacher called my mother in to express concern about how much better I was in math than in reading and writing.”

But Tate ended up excelling in all of

her academic subjects, enabling her to complete high school as valedictorian of her class while also competing on the tennis team, participating in the marching band, and performing in school plays.

At UD, she has taken full advantage of the Study Abroad program, traveling to Bremen, Germany, for materials science; Tasmania, Australia, for fluids; and Costa Rica for philosophy. “These have just been great experiences,” she says. “I love to travel, and I think it’s important for all Americans to travel—it’s an opportunity for us to show others that Americans are basically good people and also to get an idea of how the rest of the world sees us.”

Tate especially enjoyed Australia, where she made several friends with whom she stays in touch. “Their culture is similar to ours,” Tate says, “but they’re more laid back and they have a wonderful sense of humor.” She would have liked to return to Australia for Winter Session of 2005 but did not get the teaching assistant position she applied for. So she opted to take an elective philosophy course in Costa Rica focusing on the environmental ethics of the rainforest.

Like many top students, Tate has been busy as an undergraduate, serving on the boards of three resident student organizations and doing research. Her

service is an eclectic mix of engineering and social causes including holistic living and women’s issues. Her research began when she was only a freshman, reading and marking muscles on magnetic resonance images for a doctoral student under the advisement of Prof. Tom Buchanan. Her initial work resulted in her being a first-author on a paper to be reviewed for publication by an MSSE (Medicine & Science in Sports and Exercise) journal. She later initiated an independent research project based on a related topic that is serving as the basis for her senior thesis.

The research experience will serve as the basis for the next stage of Tate’s life—graduate school. She is considering completing her Ph.D. in the area of biomedical mechanical engineering and then seeking an academic position. Her top choices for grad school include Stanford University, the University of California at Berkeley, and Duke University. She’s excited about the opportunity and about her plans to eventually teach at the university level but admits that it’s not an easy choice. “It’s difficult because I also want to get out there and actually work—for example, in making prosthetics design.”

It’s a sure bet, though, that whatever Chrissy Tate decides to do, she will put everything she has into it and do it well.

Jared Wray

by Diane Kukich

Jared Wray admits that he wasn’t crazy about academics when he was in



high school, but he did like “hands-on things” and knew that he would work hard on something if he liked

it. Based on his interest in math and science, Wray decided to major in mechanical engineering at UD, and he turned out to be a top student in his class. “I worked hard because when I decide to do something, I get very competitive,” he says.

Wray’s competitive nature was stoked

by sports as well. A native of Virginia, he was recruited to play football at Delaware. “I was recruited by several other schools, too,” he says, “but I chose UD because I knew the engineering program was good. I also really liked the atmosphere that I felt here when I visited. I liked the small town, and the fan support here is tremendous.”

Red-shirted as a freshman, Wray is now in his fifth year and could still be playing football, but his career was cut short by injuries. Although disappointed that he can no longer play, Wray is happy to have been a part of the 2003 championship team, and the extra year worked out well for him academically. Left with only Senior Design to take this year, he has been able to work for an engineering firm several days a week.

That part-time job will probably turn out to be his first post-graduation career choice. Greenstone Engineering, a small civil engineering firm located in the Wilmington, Delaware, area owned and operated by two UD alums, has offered a Wray a full-time job when he graduates in January. “They’re trying to turn me into a civil engineer,” he says, only half kidding. The company, which spe-

cializes in stream restoration, is actually a good fit for Wray. “My joining them will enable them to take on more mechanical engineering-oriented projects,” he says.

Wray credits Prof. Ajay Prasad with igniting his interest in fluids. “He really worked hard to get us interested,” he says. I enjoy professors like that who are able to get students excited about what they’re teaching.”

As for football, Wray enjoyed it but never intended to make a career out of it. He is glad that he had a chance to play for Tubby Raymond before the legendary coach retired. He also found that football and engineering played off well against each other. Although challenging to manage the two, Wray says that each one took his mind off the other and provided relief. “I did give up other things, like partying on Friday nights, but I’ve always done best when I have a lot of things to do.”

That trait should stand him in good stead working for Greenstone Engineering, where he will undoubtedly be busy as the only mechanical engineer.



Alumni Careers Celebration Day

by Diane Kukich

On April 29, 2005, UD-ME will hold its first Careers Celebration Day. The goals of the event, according to Department Chair Tom Buchanan, are to celebrate the careers of the university's ME graduates; facilitate the building of stronger relationships among ME alumni, the department, and current ME students; and increase students' awareness of the variety of career options available to them.

"We realized that we have about 2700 active alums," says Nate Cloud '64, coordinator of alumni relations for the Department, "and probably close to 300 of them are in high leadership positions as CEOs, owners, vice presidents, and directors. This is a significant number of people who have achieved success, and we want to hear their stories."

To prepare for the event, a survey was sent out to alumni (see Survey article below) to provide insights into careers, the effect of the ME degree on career experiences, and significant challenges and achievements of ME alums.

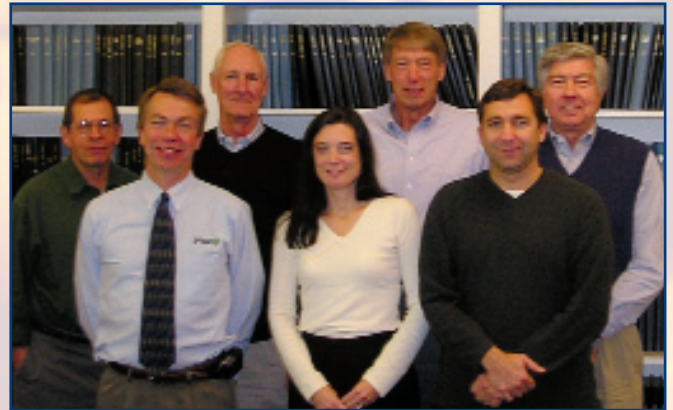
According to Deirdre Smith, Director of University Development for the

College of Engineering, the event will include students, faculty, and alumni and will provide an ideal opportunity for networking. The one-day program will also feature awards, talks by alumni, an overview of the Department, and tours. "We'd like to see this become a continuing event," says Smith.

"One of the side benefits," says Tom Frey '84, a member of the committee formed to plan Careers Celebration Day, "is that it will introduce current undergraduates to the diversity of career possibilities within and outside engineering. It's also a way to promote internships."

"Judging by the response to the survey mailing," Frey continues, "we sense that there's an untapped interest in alumni relations out there."

Committee member Bill Wagamon '62 concurs. "This is a resource that



Alumni Careers Celebration Planning Team: Front row, L-R: Jim Hutchison '78, CEO, JAED Architects and Engineers; Deirdre Smith '86 (BCE), Director of Development – Engineering; Tom Frey '84, Project Engineer, ATK Elkton; Back row, L-R: Mike Greenberg, Faculty; Dick Orth '60, Vice President, BCY, Inc.; Nate Cloud '64, President, Cirrus Engineering; Bill Wagamon '62, Director of Sales, AET Films (ret.);

Not pictured: Faculty members, Jack Vinson, Suresh Advani

didn't exist when I was a student," he says. "I would have loved this after I graduated."

Cloud emphasizes that it is not too late for alumni to respond to the request for bios, resumes, and completed surveys. "This is an ongoing process," he says. "We want to continue to gather information about as many alumni as we can."

Alumni Career Survey

by Diane Kukich

As a springboard to its first Careers Celebration Day, UD-ME Chair Tom Buchanan distributed a survey to solicit information from alumni about their careers and the effect of their ME degree on their career experiences. Over 100 alumni took the time to complete and return the surveys, and their responses made for interesting reading.

They graduated as long ago as 1949 and as recently as 2004. They have worked in sales, marketing, the law, education, and manufacturing, for private industry, their own consulting firms, and the Department of Defense, for high schools, small colleges, and large universities. One is a patent

attorney, another sells real estate on the Riviera, and a third is a podiatrist who specializes in treating injured runners. They have worked on products ranging from disposable diapers, medical diagnostic tools, and orthotics to farm equipment, combat vehicles, and semi-conductors.

When asked about the ME faculty who had influenced their lives, many names surfaced, including Profs. Meakin, Greenberg, Keefe, Majidi, Santare, Hall, Advani, Cope, Guceri, Gillespie, Wilkins, Glancey, Chou, Pipes, Prasad, Buchanan, and Santare. One alum mentioned a former lacrosse coach; others mentioned faculty who were deceased long before today's students – and in some cases even their parents – were born.

But one name came up more than any other: that of Prof. Jack Vinson. One alum stated, "In my current role, I

am often in the position of teaching manufacturing leaders, and Dr. Vinson's model is one I try to follow." Another wrote, "Jack Vinson provided support at times during my undergraduate years when I needed some encouragement and solutions to help me persevere to complete my degree."

When they're not working, these former ME's are singing in church choirs, sailing, running, skiing, kayaking, and cycling. They serve on the boards of homeowners' associations, churches, and preschools. Some do archery and pistol shooting, while the leisure activities of others include karate and crabbing. They have built houses for Habitat for Humanity, volunteered as youth coaches, and taught disabled children to snowboard. One has six kids, others have never married.

They have lived in places as close as Newark and Wilmington, Delaware,

and as distant as Alberta, Canada, and Chad, Africa. They have worked in India, Japan, and Germany.

Their greatest challenges range from managing a 2.5M ton/year steel plant, to dealing with dioxin emissions from combustion, to managing people after years of practicing engineering. Many, however, mentioned raising children

as their most challenging undertaking—a “project” that transcends engineering. They also mentioned their kids as their greatest achievement.

And most of them had lots to say about the value of their ME degrees and lots of advice to offer today’s students. Some advocated bringing alumni in to talk to current undergraduates,

and we plan to follow up on that—these individuals have a wealth of collective experience to share. But in the meantime, see the sidebars to this story for highlights of their advice and the value they place on their UD-ME education from the perspective of those who have spent years, even decades, in the workplace.

Are there any thoughts you’d like to share with fellow alumni or current ME students?

- The more you apply yourself in school, the better you will be prepared for what is next.
- Doing research while an undergrad can give you a good idea if you want to keep going that route.
- Take the Fundamentals exam as soon as you can regardless if you think you need it or not.
- Always keep an open mind.
- You never know where life will take you. You have to remain willing to accept unusual assignments or responsibilities. You may end up going in a totally different direction – but find that you enjoy it!
- It’s easy when you are an undergrad to be short-sighted and focus only on passing a subject, but if you intend to be successful in the workplace as an engineer, every subject is important to learn.
- In the summer months find a related job to your field to be sure this is what you want to do.
- Work hard.
- Have fun, it doesn’t get any better than being an undergraduate.
- Keep your options open, but focus on current performance.
- The education gives you the foundation for your career, which may take many roads.
- Enjoy what you do; you will do it a long time which is short in looking back.
- Keep studying and keep an open mind! There’s so much you can do with your degree.
- There are many career paths available to a person with a mechanical engineering degree.

Mechanical Engineering Alumni Career Celebration Alumnus Career Survey

- Name: _____
- Please respond to as many of the following questions as you feel appropriate, either on an attached sheet of paper or in an electronic Word file.
 - Please describe any additional degrees or education you received since after completing your Mechanical Engineering degree at the University.
 - How would you describe your life journey or career path since graduation?
 - What would you describe as your most challenging project or undertaking?
 - How would you describe your most significant achievement in terms of making a difference in the world?
 - How do you feel your mechanical engineering degree and the education you received at the University has served you along the way?
 - Are there any UD mechanical engineering alumni or faculty that has had a particularly positive influence on you over the years?
 - Are you, or have you been, involved in any of the following: professional societies; community/civic service; or recreational activities?
 - What suggestions do you have for improving the mechanical engineering department and its relationship with alumni?
 - Are there any thoughts that you would like to share with fellow alumni or current mechanical engineering students?
 - If you would like to take this opportunity to update your contact information in the University’s alumni database, please do so below. (This information will not be included in any biographic information shared as part of our Alumni Career Celebration.)

How do you feel your ME degree and the education you received at UD served you along the way?

- ◆ Respondents cited the following skills and knowledge they gained from their UD-ME education:
 - ◆ Knowing how to solve problems in a very general sense and knowing where to find the resources to “execute.”
 - ◆ Sound fundamentals.
 - ◆ Analysis and problem-solving, ability to understand and evaluate complex new technologies, and ability to work effectively with engineering professionals on cross-functional teams.
 - ◆ The work and study ethics to problem-solve.
 - ◆ Where to look whenever you have an unsolvable problem.
 - ◆ Understanding and means of communicating within a technical company and with customers.
 - ◆ A solid ground for evaluating new and emerging technologies.
 - ◆ Learning to be organized and logical in work processes.
 - ◆ Logical thought process.
 - ◆ Practical basis for thinking which I use every day.
 - ◆ Problem solving and project management.
 - ◆ Good foundation for biomechanics and medicine.
 - ◆ Good foundational education on which to build different career paths.
 - ◆ Lessons in perseverance and competition.
 - ◆ Analytical abilities.
 - ◆ Discipline and problem-solving approach.
 - ◆ Learning how to think through problems analytically, and learning how to learn.
 - ◆ Problem solving and qualitative and quantitative understanding of the physical world.



- Prepare in advance for class lectures, avoid cramming, pursue internships, network and step out of the box to experience all life has to offer.
- Intelligence isn't the main factor behind having a successful career. Application of knowledge and process and good interpersonal skills are the keys.
- Pay attention to all your courses; the more you know when you graduate, the easier your professional life will be!
- High engineering grades are important for some specialties and research but not for normal plant operations. Reasonable intelligence and the ability to make a group work together as a team are what get results.
- The world of mechanical engineering is broad – keep developing, changing careers as opportunities arise. When you finish a job, it is time to move on, usually every five years.
- Don't give up, engineering is tough but well worth it.
- Be proud of the education you obtain from Delaware. It is what you make of it.
- UD is a great place to be. The sky is the limit for your imagination and careers.
- Engineering prepares a student to make immediate contributions in the work environment.
- An engineering background is a valuable asset in any job position.
- There are many places that a mechanical engineering degree can take a person.
- Find a company where you can have a real passion for what you do, and work for someone who is interested in your growth.
- Get a variety of experiences when you are young to understand what you most enjoy, and have more to offer an employer.
- Get a meaningful job, one that can't be outsourced and one that advances our technical position in a world economy.
- Life is too short, do something you love, enjoy every day, do your best and forget the rest.
- Get a basic understanding of economics and business.
- The most important job is the one you have now – if you take this to heart, the rest will take care of itself. We don't always get the choice assignments in life, but if we do an outstanding job, we can better influence our future.
- You do make a difference. Only as far as you seek can you go...Only as far as you reach can you be.
- Enjoy your time at Delaware!
- Find your passion and take chances.
- Have a good time.
- Get all the hands-on experience you can; don't be afraid to start your own company.
- Keep the faith.
- You get one turn in life; don't waste it.
- Stick with it! Its tough but its worth it!
- Get the formal education and be flexible. Remember, the only constant is change.
- Expect and learn to embrace change. Practice lifelong learning.
- Utilize all opportunities for career and social advancement.

- ◆ A good basis from which to start learning what the real world is.
- ◆ The respect and confidence needed to enter the workforce straight out of college.
- ◆ Passion for learning.
- ◆ And others had more extensive comments about the value of their UD education:
- ◆ Junior and senior research was by far the best experience because it made me be very proactive and matured me before going into the job market. It made me think. It made me a "doer."
- ◆ My ME degree really opened the door for me to pursue just about anything I wanted. The field of science in which I now work (biochemistry) is worlds away from mechanical engineering, but the physical principles are often analogous.
- ◆ An ME degree commands some respect – the rest is up to you.
- ◆ The education broadened my horizons, increased my capability to think, and increased my writing skills considerably.
- ◆ It got me the start I needed to find my way into business.
- ◆ It has enabled me to obtain very good jobs & a great career.
- ◆ Opened the door to my first career assignment and provided analytical tools as well as pragmatism for life and second career.
- ◆ I have learned that I will hire anyone with an engineering degree and put them in any operations job. I know how they think and why they think that way.
- ◆ The problem-solving skills I developed have helped me be very flexible in the variety of roles in my career.
- ◆ Besides an excellent grounding in the principles of mechanical engineering, it gave me an appreciation for the value of problem-solving, and for pursuing excellence in all things. I also received a well-rounded education in addition to my technical subjects, and have continued to appreciate literature, music and the arts throughout my career.
- ◆ Being a manager now, I realize the importance of obtaining a degree from a well respected engineering school.
- ◆ I felt I used the computational skills I learned in my degree more as a high school teacher of pre-engineering than [I did] as a young engineer.
- ◆ Made me marketable and flexible to change jobs when necessary and given me confidence in my ability to do things I want to.
- ◆ Beyond the textbook technical elements, my mechanical engineering education at Delaware instilled in me very comprehensive analytical capabilities which I continue to draw on essentially every day of my life.
- ◆ The team projects really prepared me for my career in construction, where we have constantly changing project teams.
- ◆ My mechanical engineering degree and the education I received at U of D are the underpinnings of my career. They enabled me to understand the technical challenges and gave me an effective approach to problem solving.

Katherine (Piazza) Thuma Wins Alumni Drawing



by Diane Kukich

Katherine M. Thuma (Piazza) is the winner of the random drawing from the pool of all who completed the alumni survey.

ME alumni coordinator Nate Cloud said, "We found her career

to be quite interesting and varied for a young person. Coincidentally, Katherine helped me in her junior year with a campaign to solicit alumni emails, netting about 700 out of 2700 alums."

Thuma, who is currently working on her MBA with a concentration in technology management, has been working for about two years for McLaren Engineering Group, a consulting engineering firm just north of New York City. She was recently promoted to Staff Engineer in the company's

Entertainment Division. "I've had the opportunity to work on rock-and-roll stages, Las Vegas shows, Disney events, Cirque du Soleil shows, Broadway shows, the Super Bowl Halftime Show, and the MTV video music awards, just to name a few," she says. "There is a whole exciting world of entertainment engineering that I never knew existed but was lucky enough to fall into."

After getting married last month (to Delaware alumnus Benjamin Thuma), Katherine moved away from the company's main office, so she is now working in a solo office trying to expand the company and division into the New England area. She predicts that the work she is now starting in the marketing/development area will be her most challenging to date. "I have no training in this field, so I am following my instincts and hoping for the best," she says.

Thuma is undoubtedly well prepared for the challenge. "The most important lesson that I learned at UD was not really taught in any class," she says. "I was never the best student, and I certainly wasn't getting straight A's, but I worked very hard, and above all else I learned that hard work does pay off. Once you get out into 'the real world,' the grades you got in college don't really matter.

How you present yourself, how you handle problems, challenges and setbacks say a lot more about you as an engineer than your GPA can."

Thuma names Dr. Jim Glancey as one of the most influential professors that she studied under at UD. "He had a gift for treating all his students like adults, rather than students," she says. "Dr. Glancey also had the ability to make you want to raise the bar on every endeavor you attempted, and he brought 'reality' to a curriculum filled with 'textbook questions.' Every time I think about the Solar Decathlon and senior year at Delaware I think of all the valuable lessons Dr. Glancey shared with us."

Thuma is currently the Treasurer for the Rockland County chapter of the Society of Professional Engineers. She is also the High School Relation representative for the chapter's annual Engineering Expo.



The winning ticket

UD Mechanical Engineering Alumni Careers by Title

Total on list	2658
No employment information	1107
Engineering/Scientist/Technician/Programmer	831
Supervisor/Manager	259
Business Leader (CEO, President; VP; Director)	213
Academic (Professor, Researcher; Teacher)	74
Business (Finance; Marketing; Sales)	52
Consultant	35
Law (Attorney/Partner/Council).....	21
Military/Law Enforcement	12
Homemaker	11
Physician/Medical Technician	7
Miscl. (Eg: Storyteller; Singer; Pilot; etc.)	7
Clergy	3

We sorted the Alumni database, by title, with the intent of simply counting the number of engineers, etc. It wasn't as easy as that. After a lot of fiddling around we came up with the above listing. Lot's of overlap, and don't bother to add up the numbers, but we hope you find it interesting



Celebrating Alumni Careers

Ten Mechanical Engineering Alums Cited for Distinguished Careers

by Nate Cloud

Ten ME alums have been selected by the Alumni Career Celebration Planning Team (see picture – top of pg 8) as distinguished representa-

tives of all of the careers of our alumni around the word. Their career stories are included below.

We started with all of the wonderful feedback that we received last fall from those of you who responded to ME Dept. Chair's request to begin to participate in our Alumni Career Celebration project by sending us biographical career information. We reviewed all of this information, and based our section on the following criteria: Achievement;

Impact; Uniqueness; Interesting.

It was difficult to make a selection – we felt everyone's career is distinguished in it's own way.....but we made a choice for this year. We hope you agree that this diverse group of alums provides worthy examples of careers that all of us, and our current ME students, either reflect upon, or aspire to.

Donald R. McCoy is a Deputy Associate Director for Weapons Physics at Los Alamos National Laboratory (LANL). After earning his BME at Delaware in 1975,



McCoy went on to earn MS and PhD degrees in nuclear engineering from Northwestern University. McCoy is currently responsible for setting priorities, planning, resource allocation, and monitoring execution of the entire range of nuclear weapons activities, totaling \$1.25 billion per year, at Los Alamos.

"My education at the University of Delaware gave me technical problem-solving skills and discipline that made my graduate school education at Northwestern relatively easy," says McCoy. "I thank Professors Wally Walters and Tsu-Wei Chou for being great mentors and teachers. I remember attending freshman orientation in the summer of 1971 and being told, since I was from Caesar Rodney High School in Camden-Wyoming (or "lower slower Delaware," as it was known), that it was fifty percent likely I would

flunk out of engineering school in my freshman year."

"I had a sense of humor about the message that was given to me," he continues, "and I had an attitude the rest of my time at the University that the analysis was flawed and I would succeed. I feel fortunate to have been able to support the University financially over many years and will always be proud of the institution."

McCoy joined Los Alamos in 1980 and has experience in simulation code development, nuclear test diagnostics, and nuclear weapon design and certification. He has managed many successful programs at LANL but cites the following as his three most significant accomplishments: (1) participating in the design, development, and testing of the U.S. nuclear weapons stockpile from 1982 through 1992; (2) participating in the development of a stockpile stewardship program that maintains confidence in the U.S. nuclear weapons stockpile without additional nuclear testing beginning in 1993; and (3) procuring the most capable computer in the U.S. in 2001 – the 30 trillion operations per second "Q" machine at Los Alamos.

McCoy has served as technical director to the Director of the Department of Energy Testing Division, and he received the DOE

Award of Excellence, Nuclear Weapons Program, in 1986, 1989, 1990, 1992 and 1993.

A member with his wife of the Delaware Diamonds Society, McCoy was named to the University of Delaware's Alumni Wall of Fame in 2004. The Wall, located in the Alumni Lounge of the Perkins Student Center, was established by the University and the UD Alumni Association to recognize outstanding professional and public service achievements by UD graduates.

"My education at the University of Delaware gave me technical problem-solving skills and discipline that made my graduate school education at Northwestern relatively easy."



Frederick H. Kohloss, a consulting engineer in Hawaii beginning in 1956, designed the mechanical services for many major construction projects in Hawaii, the western United States, and other Pacific Ocean areas.

Kohloss earned a B.S. in mechanical engineering in 1943 from the University of Maryland, then served as a lieutenant in the 125th Armored Engineer Battalion of the 14th Armored Division in France and Germany and the 1625th Engineer Construction Battalion in the Philippines and the occupation of Japan.

After the war, he continued his education on the G.I. bill while working full-time, earning an MME from the University of Delaware and a JD from George Washington University. He taught mechanical engineering at

GWU and was chief engineer of mechanical contracting firms in Washington D.C. and Cleveland prior to moving to Hawaii. He has also taught engineering courses part-time at the University of Hawaii.

His firm, Frederick H. Kohloss & Associates, had branches in Melbourne, Australia, and in Tucson, Cleveland, and Denver. In 1991, Kohloss sold his firm to the Australia-based Lincolne Scott Group. He retired from that firm in 2001 and continued as an individual consultant until 2004.

Kohloss served as President of ASHRAE in 1985-86, is a Life Fellow of ASHRAE and ASME, and is a Fellow of the Institution of Engineers Australia and the (British) Chartered Institute of Building Services Engineers.

He received ASHRAE's Bill and Louise Holladay Distinguished Fellow Medal in 1998 and Distinguished 50-Year Member and Exceptional Service Awards in 1999. He received the Distinguished Alumnus award in 1997 from the University of Maryland's Clark School

of Engineering. Kohloss was named Hawaii's Engineer of the Year in 1980, and received the Lifetime Achievement Award from the Hawaii Council of Engineering Societies in 1999. He received an Outstanding Alumni Award from UD's College of Engineering in 2002.

"To appreciate and enjoy the profession," Kohloss says, "engineers should continue lifelong learning and self-education, as technology progresses at an ever-increasing rate. Participation in the work of engineering societies is a good first step."

"To appreciate and enjoy the profession, engineers should continue lifelong learning and self-education, as technology progresses at an ever-increasing rate."

Stephen D. Popovich was born in



1922 and grew up during the Great Depression, when jobs were scarce and completing high school was a noteworthy accomplishment. Going to college was

a childhood dream for Popovich, but his route there was not direct. "Financially, college was only a dream," he says. After graduating from Conrad High School in Wilmington, Delaware, in 1940, he served two years as a machinist's apprentice and then was accepted into the Navy Flight Training Program.

Four years of military service as a fighter pilot took him to the North Atlantic and then the Pacific Theater, where he flew for the Iwo Jima and Okinawa engagements. In all, he made 200 carrier takeoffs and accumulated 2,000 hours of flying time. Although he considered mak-

ing the Navy his career, Popovich opted instead to join the Navy Reserve and go to college on the G.I. Bill. His childhood dream came true when he graduated from UD with a degree in mechanical engineering in 1949.

In 1950 Popovich began what would turn out to be a 38-year career with General Electric. He worked on jet engine development and was involved in demonstrating the flight and reliability characteristics required for mass production. Later, he moved from Cincinnati to Philadelphia to join what would become GE's Aerospace Business.

"I found myself in the middle of getting a new business going, finalizing the design for enabling a space vehicle to successfully reenter the earth's atmosphere, and getting Air Force approval for the design," he recalls. In 1959, he and his team successfully tested the first reentry vehicle, the Mark 1, aboard a Thor missile.

This experience led to Popovich's being assigned to represent GE with the Electronics Industry Association (EIA) in Washington, DC, through

which industry people worked with government representatives to develop contract terms and administrative and technical standards that would later become part of the Federal Procurement Regulations.

Then, in 1974, with his accumulated credentials, Popovich was offered a position in GE's Advanced Reactor Department in San Jose, where he was to be a bridge between GE and the Department of Energy. Although he had some reservations about the offer, Popovich accepted it and describes it as "a great move." He retired 14 years later, in 1988, and he and his wife stayed in San Jose, where their only son and his family also live. He and his wife now travel and are active in a variety of events and organizations for seniors.

"As horrible as it was, World War II did wonders for me," Popovich concludes. "It enabled me to get a job, to have the experience of flying military aircraft, and, thanks for the GI Bill, to get a college education. Thank you, University of Delaware—you changed my life."



Amy Lerner joined the Mechanical



Engineering faculty at the University of Rochester in '97 and was one of the founding members of the Biomedical Engineering Department in 2000. Her

research involves orthopaedic biomechanics, including studies of normal growth, soft tissue injuries, and development of osteoarthritis. She leads the Biomedical Engineering Senior Design Program and teaches Biosolid Mechanics. In addition, she coordinated the RUBI summer undergraduate research program (Research for Undergraduates in Biomechanics and Imaging), which is sponsored by the National Science Foundation.

Before entering the field of biomechanics, Lerner graduated with a B.S. in Textile Science from Cornell University in 1983. Following graduation, she worked for four years as a softgoods design engineer in support of the spacesuit program at ILC Dover, in Frederica, Delaware. She then returned to academia to study biomechanics, earning a B.S. in mechanical engineering from UD and then a PhD from the University of Michigan. Additional design experience in industry came

from experiences at W.L. Gore and the DuPont Company during her education. She continues to collaborate with industry in her research of the knee joint.

Lerner jokes that she has learned to appreciate why all the professors' doors were closed at UD. "Juggling research and teaching and a 'real life' has been challenging, particularly now as I try to re-create a real senior design program modeled after the one at Delaware," she says, "and after helping our faculty successfully navigate our first ABET accreditation last fall."

"I attended the Orthopaedic Research Society last spring and ran into five graduates of our undergraduate BME program, four of whom have gone on to graduate work in biomedical engineering," she continues. "So even on days when I can't get any research done, I can remember that my impact on research has a 'multiplication factor' through my encouragement and training of undergraduates to consider research careers."

Lerner views her engineering degree as a solid foundation on which she built her career. She cites the fundamental training as critical, as were the opportunities for research and the applications to specialty areas in senior-level courses.

The experiences she remembers most vividly were the senior design course and a biomechanics course

"I'm very excited to hear how successful the biomechanics area has become for UD."

that confirmed her interest and allowed her to stretch and explore in that area. "I'm very excited to hear how successful the biomechanics area has become for UD," she says. "It was really just getting started as I graduated, and it's impressive to see how it has grown."

Lerner is involved with the Bioengineering Division of ASME, the Orthopaedic Research Society, and the Biomedical Engineering Society. As for recreation, she has little time to spare for that....

Lerner urges her former professors to "keep pushing students with senior design—your program is one of the best around, and I am still proud to be an alum of that program. I now KNOW how much work it is for the faculty, but it is worth it. Even when the students complain about how much work it is—which they do about mine, too. The more 'real world' it is, the better. Your interactions with industry are still something that impresses me, and one aspect I've yet to sort out."

In addition to a BME from Delaware, **John Thackrah** holds an MBA from



Rensselaer Polytechnical Institute. He is currently Vice President and General Manager of Operations for Pratt & Whitney, a division of United

Technologies Corporation.

In describing his career path since graduation, Thackrah says, "It's been a great ride so far. My career has taken my family and me to many foreign countries and many states within the U.S. It's been a great opportunity."

In his current position, he provides overall leadership to the Pratt & Whitney Combustor, Augmentor and Nozzle Module Center, which includes responsibility for operations, engineering, purchasing, and aftermarket.

Thackrah joined Pratt & Whitney in 1979 as a project engineer and worked on a variety of projects during the next two decades. In addition to work in the company's U.S. offices, Thackrah successfully completed the green field start up of an Aftermarket Operations component repair facility in Singapore, an endeavor that he cites as his most challenging project.

His most significant achievement in terms of making a difference in the world? "Being part of the engineering design and development team that

developed the modern aircraft engines that power the airliners we all fly today," he says. "My mechanical engineering degree and the education I received at the University were invaluable. I could have never achieved what I have without my technical degree from UD."

In his spare time, Thackrah serves as a deacon in his church and is an active rower, bicyclist, and golfer.

He sees alumni as a valuable, and sometimes untapped, resource for faculty and current students. "If I had heard someone with 25 years of practical business experience come to lecture a class on what practicing engineers do when I was a student, I think I would have gotten a lot out of it and found it rewarding," he says.

Alex Bourdon continued his education after earning his BME by taking multiple business and finance courses at the University of Delaware, the University of Chicago, and the Wharton School of Business. He



describes his career path as “fulfilling”: In the past 24 years, he has worked in basic R&D followed by a series of manufacturing assignments in nuclear defense materials, polymers, fibers, films, instruments, and, currently, medical diagnostic reagents.

“Along the way I have had opportunities in engineering, maintenance, human resources, and manufacturing management,” he says. “We relocated seven times and experienced one divestiture, one acquisition, and one merger.”

Bourdon currently manages global manufacturing operations for Dade Behring, a position that has enabled him to establish strong ties between the company and UD’s College of Engineering and Health & Nursing Sciences.

“One of the most challenging and personally rewarding projects in my career was the turnaround of a manufacturing plant in California,” he says. “We had to turn an underperforming plant into a competitive one while at the same time reducing workforce, improving quality and delivery, and working under the real threat that the outcome of all the work might still be to shut the operation down or relocate it.

“The rewarding part was seeing the people step up to the challenge install new operating systems, establish new standards of performance, and learn new skills...”

“The rewarding part,” he continues, “was seeing the people step up to the challenge, install new operating systems, establish new standards of per-

formance, and learn new skills. It quickly became the highest quality plant with the most favorable financial performance in the company. The plant’s new competitiveness created the opportunity for us to take out excess cost, increase sales, re-negotiate our lease in the expensive Silicon Valley area, and retain the jobs for the people who remained.”

Bourdon credits his ME degree with opening the door for him to pursue just about anything he wanted. “The field of science in which I now work – biochemistry – is worlds away from mechanical engineering, but the physical principles are often analogous. What I found exceptionally valuable was the course I took with Dr. Maurice Young in control systems dynamics. It really formed a strong foundation for understanding not just machinery controls, but also management control systems, their interactions and dynamic effects.”

In his spare time, Bourdon coaches youth sports and participates in basketball, volleyball, tennis, golf, karate and marathoning. He also serves on the visiting committee for the UD College of Health & Nursing Sciences and has participated in AmeriCares Homefronts and Habitat for Humanity constructions.

Dr. Anthony L. Laganelli is Chief Scientist and Assistant Vice President for the Propulsion and Information Technology Division within the Space and Defense Group (SDG) of Science



Applications International Corporation (SAIC). A 25-year veteran of SAIC, Dr. Laganelli joined the company after a distinguished career at the General Electric Reentry Systems Department, where he served as a program manager, engineering staff manager, and consultant on several national programs.

At SAIC, Dr. Laganelli’s work involved research and development in high speed energy transport. A focus of this work was on aeroa-

coustics and the impact of acoustic loads on structural response and aging aircraft. He has become a national expert in this area, and his innovative techniques have been instrumental in providing solutions for design of aerodynamic surfaces.

Dr. Laganelli, who earned his PhD in Applied Science at UD in ‘66, has also taught at the university level and has guided a number of advanced degree students. He was a co-founder of the Pennsylvania State University (King of Prussia, PA) incubator program that became a “pilot” program throughout the country. He is a member of several national institutions and has served on panels for NASA, the U.S. Army, and the US Air Force. He is also involved in community youth sports programs.

Laganelli describes the design and development of interplanetary space probes as his most challenging project or undertaking, and he says that his most significant

achievement in terms of making a difference in the world was “helping toward the design of reentry vehicles and establishing technical superiority for the US.”

“Graduate school prepared me mentally and most importantly taught me to focus and complete projects,” says Laganelli. “I really believe that the engineering field prepares a student to make immediate contributions in the work environment.”

“Graduate school prepared me mentally and most importantly taught me to focus and complete projects.”



Jack N. Pezza is a Mechanical



Engineer in the Shock Qualification Program of the Naval Surface Warfare Center-Carderock Division (NSWCCD) in Philadelphia, Pennsylvania.

Pezza has held a variety of positions within the NSWCCD since 1998, and he is experienced in integrated shipboard systems and proficient at identifying shipboard problems and developing creative solutions to them.

After completing his BME at UD in 1998, Pezza went on to earn a Master's degree in Mechanical Engineering at Villanova University,, he also holds a certificate in Composites Engineering

from Villanova University.

"I have had the most fortunate experiences since graduating from UD," Pezza says. "At the NSWCCD, I have had the opportunity to collaborate with the finest engineers in the fields of ship survivability and mechanical shock and vibration. The mechanical engineering background that I received at both UD and VU is the staple of my work. I have taken every opportunity to learn from my experiences, my mentors, and my fellow engineers. The programs and projects I have contributed to over the years have been challenging, rewarding and fulfilling."

Pezza describes the Survivability Enhancement Program (SEP) as his most challenging undertaking. "It was my first 'full throttle' exposure to executing a program as the lead engineer responsible for team members, product delivery, acquiring project funding,

"Life is too short, do something you love, enjoy every day, do your best and forget the rest."

budgeting, scheduling, and marketing of services and technical expertise," he says. "Working for the Department of the Navy in the field of ship survivability means that the engineering solutions I've contributed to create a safer working environment to the sailor in the field."

Pezza's best advice: "Life is too short, do something you love, enjoy every day, do your best and forget the rest."

Patrick J. Reynolds is co-founder, President, and CEO of PoolPak, Inc., Technologies Corporation in York, Pennsylvania, a company that makes indoor pool dehumidification systems.



His primary responsibilities include sales, marketing, service and financial management. Since its establishment in 1986, the company has grown from just under \$250,000 in sales to over \$17 million (2001). His company's products are in many high profile natatoriums, including the Harry W. Rawstrom

Natatorium in the Carpenter Sports Building.

After earning his BME at UD in 1968, Reynolds took additional courses in materials science, solid state physics, management, science and business administration. He describes his life journey or career path since graduation as "an evolution from a highly technical and theoretical college launch to blending that knowledge with general management skills." His greatest challenge has been "acquiring a working knowledge of the business world," and his most significant achievement was "growing a successful business and being able to give 100 over-70 people employment."

Reynolds credits his mechanical engineering degree with giving him problem solving abilities as well as qualitative and quantitative understanding of the physical world. The solid state physics courses, he says, helped prepare him for the coming computer revolution.

In his spare time, Reynolds has been involved in ASHRAE, crisis intervention assisting teens and college kids dealing with emotional and drug-related problems, and tutoring underprivileged inner-city children. He has traveled extensively within the U.S. and around the world.

His advice for current students: "Be sure to get a basic understanding of economics and business. Engineering dwells in the realm between research and users of technology. In this arena, the question of 'is it affordable?' is always being asked."

Dave Bach is President & CEO of Scientific Products & Systems, Inc. at the University of Maryland Baltimore Campus (UMBC) Technology Center in Maryland. The firm is a start-up company that is developing a precision fluid dispensing system for the biosciences.



After completing his bachelor's

degree in ME at UD, Bach went on to earn an M.B.A. in Technical Management at Nichols College in Dudley, Massachusetts. His experience is wide-ranging, including senior management, manufacturing, and engineering. He is skilled at public offerings and venture capital funding, patent infringement analysis and contract negotiation, integrated product design and development, and project, quality and facilities management.

Before starting Scientific Products & Systems in 2000, Bach worked for several companies, including Intelligene

USA, National Instrument Company, Cardiovascular Diagnostics, Automotive Diagnostics, Baxter Diagnostics, Gene-Trak Systems/AMOCO, and the DuPont Company.

Bach is the author or co-author of eleven patents on inventions ranging from an optical detector cell and an apparatus for manufacturing liposomes to a Precision Fluid Dispensing System and a fluorescence detection system. He has also co-authored two technical papers.

Distinguished Alumni by Diane Kukich

Alumni Feedback

Stephanie Fagan was promoted to President of Office Management Systems Corp. software company. As a result, she, her husband, and their 14-month-old daughter happily relocated to the company headquarters in Southampton, NY, in October.

Meg Frost BME '94 loved the University so much she decided to stay in Newark. She also could not stay away from campus, so she is taking classes whenever she can, this time for a degree in physics. She consults part time out of her home office for the MeadWestvaco Corporation, as the Newark facility of Westvaco, where she was a project engineer, closed about two years ago. She has two children and is also on the Board of Directors of the Delaware Academy of Science.

Kevin Warren and his wife, both UD grads, moved back to the area with their two boys this year after more than a decade away in Wisconsin and California. They are very pleased to be back. One of Kevin's main projects has been transitioning the energy efficiency consulting practice he began in California.

Brad Carey BME '03 is currently working as a Mechanical Design Engineer in HVAC at Henry Adams, LLC located in Towson, MD. His com-

pany is currently looking for a Mechanical Engineer to be hired full time in the near future. A brief description of the company and the work that would be involved as a mechanical engineer can be found at the website listed: <http://www.henryadams.com>. Please notify Brad or Charlie Henck (chenck@henryadams.com) if interested.

David Teller BME '80, was promoted to Global Supply Chain Manager for Honeywell International's Research and Life Science business and was transferred to Grand Haven, Michigan. He and his wife Marsha celebrated their 20th wedding anniversary in 2004. They have a 16-year-old son, Brandon, and twin 13-year old daughters, Morgan and Lauren.

Katherine M. Thuma (Piazza) BME '01 married fellow Delaware alumni Benjamin Thuma (Class of 2003). She also got a promotion at M.G. McLaren, P.C., where she has been working since shortly after graduation. The company is a consulting engineering group with its main office in NY. She is in their Entertainment Division, working on rock and roll stages, Broadway shows, and even the Super Bowl Halftime Shows (just to name a few jobs). Since she moved to Connecticut after her wedding, she is

currently working in a solo office trying to develop a marketing plan to expand into the New England area. Coincidentally, the company's structural division is doing the engineering on the new performing arts center at UD. Small world!

Steve Andersen BME '90, MME '97 and his wife Jennifer added a fourth child to their family in September.

Alan W. Flenner BME '86 is on a leave of absence from his position as an attorney at High, Swartz, Roberts & Seidel in Norristown, PA to serve as a staff officer with the First Marine Expeditionary Force Engineer Group (I MEG) in Iraq. Alan is a Commander in the Navy Reserve Civil Engineer Corps and was recalled to active duty in July 2004 in support of Operation Iraqi Freedom. I MEG is responsible for the command and control of military units providing engineering and construction support for First Marine Expeditionary Force (I MEF) combat operations and force protection; and for civil-military humanitarian assistance and infrastructure restoration for the people of Iraq. Alan is currently involved with the reconstruction effort in Fallujah, Iraq.

Richard D. McNett passed away on Sunday, October 27, 2004.

Edward J. Yuschak Jr.

'51 - 2004

Sadly, we received the notice of Edward Yuschak's death during the period late last year that many alums were sending us career information for the "alumni career celebration project." Ed's career in this world is completed, but his obituary (reprinted below) reveals a worthy legacy and example for us all.

Ed passed away peacefully in his family's loving arms at home in Los Altos on September 15, 2004, after a courageous battle with cancer. Ed was 53.

Ed is survived by his wife, Jacquie Rupp, and their two sons, Christopher (15) and David (13), as well as his father, Edward Yuschak, Sr.; brothers Thomas and his wife Mary; Mark and his wife Debbie; Robert; Michael and his wife Kerren; and their children. Ed is pre-

deceased by his mother, Bernadette (Cleary) Yuschak.

Born in Bayonne, New Jersey, June 14, 1951, Ed grew up on the Jersey Shore and graduated from the University of Delaware. Receiving his MBA from Santa Clara University, he lived in the Bay Area since 1978 and worked for over 20 years in sales in the semiconductor manufacturing industry.

Ed's passions and proudest achievements centered on his family and on coaching. Ed raised two fine boys and devoted many years to coaching his sons and literally hundreds of other boys in youth baseball and basketball. An inspired coach, Ed utilized the playing field as a forum to teach his players significant life lessons: gifts they will carry far and beyond the playing field. Coach Ed incorporated his irrepressibly positive attitude and enthusiasm into all his endeavors; including and most

significantly the grace with which he dealt with his disease.

In lieu of flowers, the family requests that donations be made to the "Coach Ed Yuschak Fund" established by the Los Altos Little League. LALL will use the funds to expand and renovate pitching/batting practice areas at Purissima Field, Los Altos Hills. The league will also create a bermed lawn area in a shady tree grove where fans can sit and enjoy games. This memorial honors Ed's longstanding devotion to the youngsters and families in our Little League baseball community and, in particular, his passion for the principles of the Positive Coaching Alliance.

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