

SPRING 2012

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MECHANICAL & AEROSPACE ENGINEERING

Recent MAE alumna cycles professionally, competes internationally



Jackie Crowell worked hard over her educational career, earning a 3.62 GPA and even co-oping with General Electric in the fall of 2010.

Like most MAE students getting ready to graduate, she sent out her resume, hoping for the best.

But she wasn't applying for engineering jobs — she was vying for a place on a professional cycling team.

Each semester, on top of her academic work, Crowell was lifting weights, doing stadium steps, stretching, spending about 20 hours a week on her bike and participating in the UF Cycling Team, which served as a great support base to help her launch her professional cycling career.

She signed with her first pro cycling team in spring 2009, and this past October, she took an even bigger step — she signed to be

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David W. Hahn

Dear Colleagues, Alumni and Friends,

As you will read in this issue, the MAE students, faculty members and alumni continue to excel in many areas. Our ASME students set a very high standard for other schools to follow in their hosting of the Professional Development Conference, while two of our AIAA students visited Capitol Hill as part of the national AIAA Congressional Visit Day, a first for our Gator engineers.

As I write this letter, our Society of Automotive Engineers student design team is traveling to Michigan for the Formula SAE collegiate design competition. We also hosted Florida Lt. Governor Jennifer Carroll for the unveiling of SwampSat microsatellite, an effort led by Dr. Norman Fitz-Coy. Lt. Governor Carroll, who serves as Chairperson of Space Florida, interacted a great deal with our students and affirmed Florida's commitment to the aerospace industry. Overall, it has been a great semester for MAE.

I want to focus my attention with this letter on the research enterprise of Mechanical and Aerospace Engineering. At any university with Research I level status, graduate education plays a vital role in the university mission. MAE is no exception. Our M.S. and Ph.D. programs in both ME and AE provide state-of-the-art education and training to the future generation of engineers and scientists, who upon graduation pursue careers in academia, private industry and a broad range of government agencies and national laboratories.

While at UF, our graduate students also assist with the education of our undergraduates in their roles as teaching assistants, where they provide office hours for course assistance, help teach our many lab courses, conduct problem solving recitations and help mentor our undergraduate students who get involved in our research laboratories.

Research activities keep our faculty members engaged at the leading edge of science and engineering, allowing them to bring contemporary knowledge to our classroom while also promoting technical prominence to our nation.

It is interesting to consider the dollar level of sponsored research in MAE, what we collectively refer to as our contracts and grants, as well as the associated sources of funding. The back cover shows a graphic of all research funds awarded to MAE over a recent 15-month snapshot. During this period, MAE averaged more than \$1 million of new research awards each month, which also tracks our actual research expenditures and ranks us top among the College.

MAE has a very impressive and diverse funding portfolio, including significant funding from the U.S. DOE and DoD, the National Science Foundation, NASA and NIH. There are significant opportunities for our MAE faculty members in medical-related research, and it is nice to report that our funding from the National Institutes of Health is rapidly increasing. Our industrial funding is healthy at present while having room to grow, noting that we currently work with companies located throughout Florida, as well as national and international corporations.

Externally funded research provides direct funding for our graduate students, notably our Ph.D. students, as well as state-of-the-art equipment for our research laboratories, summer salary support for our faculty members and much-needed overhead support dollars to the university and College of Engineering, as well as directly to MAE.

Overall, I am happy to report that the MAE research enterprise is thriving due to the efforts and talents of our faculty members and our graduate students. It is truly great to be a Gator Engineer!

David W. Hahn
Knox T. Millsaps Professor & Chair
Department of Mechanical & Aerospace Engineering

Professor researches nuclear power plant safety

Japan's nuclear crisis left many people questioning the safety of nuclear plants.

Assistant professor **DuWayne Schubring** has made it his job to be concerned about and work to improve upon the future safety of power plants.

At the time the tsunami hit Japan, Schubring said the country's nuclear plants operated on active safety systems, which require energy to function. When power to the plants was knocked out, there was no way for the systems to have the energy to operate.

These systems are necessary because even when you turn a nuclear power plant off, it's only 93% or 94% off, he said. Radioactive decay generates the rest, and it needs to be cooled in order to be turned off completely. With active safety systems that can't function, the cooling is impossible.

Advanced nuclear power systems, nuclear reactor thermal hydraulics and nuclear reactor safety all fall under Schubring's research interests, and his work has involved developing better fundamental models to fit into the characterization of power plants.

Improved characterization of nuclear plants — which consists of calculating the most likely chances of accidental power failure and striving to solve those potential problems — is one of the main priorities in the industry right now, he said. To him, this type of research is based on the equation: knowledge equals efficiency times safety.

"The only way to make it safer is to make it less efficient or to have more knowledge about it," he said.

The nuclear industry has its own set of computer codes different from any other field, and they benefit from improved two-phase flow models, such as those generated in his research.

A recent graduate of his, **Wesley Kokomoor**, developed visualizations to provide more data to put into these models.

Since Japan's experience, research has been focused on reactor safety, Schubring said. The other main priority of industry professionals is adding additional passive safety for the next generation of nuclear plants.



Assistant Professor DuWayne Schubring

The reactors set to be built in the United States incorporate elements of passive safety.

Passive safety systems take away the need for energy and utilize natural forces that can't fail.

"A pump can fail," he said. "Gravity can't fail."

Schubring chose this line of work because it combined two of his interests: nuclear engineering and thermal sciences.

"This is a challenging and unusual aspect of the thermal sciences that can have a great effect on reasonably priced electrical power [produced] in a safe manner," he said.

His students learn concepts of nuclear engineering in classes like reactor thermal hydraulics and the elements of nuclear engineering design.

He's enjoyed seeing the students strive for a wide range of career goals, from wanting to work in the nuclear reactor operating industry to wanting to serve in the nuclear navy.

"The first time I usually see the students is the spring semester of their junior year," he said. "After working with them in their last semester, you see a lot of growth between the 20-year-old and the 22-year-old."

One of his favorite parts, though, is that courses can go from teaching the fundamentals to introducing a practical application.

"One week I'll be teaching them how to calculate a friction factor," he said, "and two weeks later, they're able to apply that to a real reactor system." ▲

Professor Emeritus Clarkson helped make MAE what it is today



Professor Emeritus and former Department Chairman **Mark Clarkson** had an extremely productive career in the aircraft industry before taking on leadership roles at the University of Florida.

Clarkson worked on the F8V Navy Fighter, A41 Dive Bomber and P66 Vultee aircraft and

held jobs with the Douglas Aircraft Company, the Vultee Aircraft Company and the Chance Vought Aircraft Company.

Clarkson served as department head of the Aeronautical Engineering Department beginning in 1961. He held the position for a decade before taking a year-long sabbatical working with NASA scientists at the research center in Moffett Field, California.

Clarkson recently remarked, “Things were different from how they are now. The department was housed in an old hangar building with the Department of Chemical Engineering. Before the O’Connell Center was around, there was a low-speed wind tunnel under construction, which was later torn down to make room for the home of Gator basketball.”

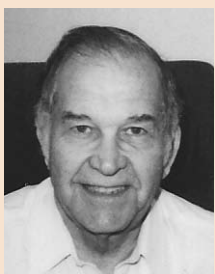
Clarkson remembers that even though the facilities were poor, morale was good, and many impressive students and faculty joined the department. While the master’s degree program was already in place, the Ph.D. program was just getting started.

The department established satellite offices in West Palm Beach and Fort Walton Beach to support research and education programs with growing commercial and government aviation interests in those areas, such as Pratt & Whitney.

Clarkson managed the merger of the Aerospace Engineering and Engineering Sciences and Mechanics Departments in 1973, creating one of the fundamental units of today’s Mechanical and Aerospace Engineering Department. “In my opinion, it was a good move,” Clarkson said. Clarkson retired in 1986 and now lives in Washington. ▲

Professor Emeritus Charles Taylor receives recognition

Credit to Mary Hughes, The Oak Leaf



Charles E. Taylor, Ph.D., has received recognition as a “gifted mentor who produced a new generation of researchers in experimental mechanics.”

The Society of Experimental Mechanics (SEM) created the C.E. Taylor Award in his honor in 2000.

The award is given bi-annually to an SEM member who demonstrates technical excellence and good citizenship within the society.

Taylor has attended every national meeting of the SEM since 1955, and when he attended his 100th meeting in June

2011, the society gave him special recognition. In his 64 years as a member, Taylor has been honored often by the SEM and has served in many capacities, including president in 1967.

Other organizations have honored Taylor, as well. He was elected to the prestigious National Academy of Engineering in 1979 and received an Honorary Doctor of Engineering degree from Purdue University in 2003.

Taylor retired following a long career in academia at the University of Illinois and the University of Florida. His legacy continues through his impact on the lives of thousands of students over the years. Many of his Ph.D. students are now the leaders in this discipline across the world. ▲

MAE instructor finds his passion in teaching

When Instructor **Mike Braddock** prepared to graduate UF, he thought he'd go into industry and leave the university — that taught him so much — to live in his memory.

But he said God had other plans.

While working in industry solving a variety of problems for different customers, Mike felt something was missing.

"It's hard to describe," he said, "but each time I wrapped up a project, I still felt a longing for something more, as if a core piece of my job was missing."

He applied for a teaching position at UF and decided that connecting with students and helping them reach their goals would be a major component of his work.

He believes these relationships and the opportunities students have to gain practical experience are two of the most influential benefits students can get in an education.

The Design & Manufacturing lab that Mike teaches is designed to allow students to get hands-on experience in the classroom, and Mike strives to make it a warm and inviting atmosphere. He wants students to feel comfortable approaching him with questions about the subject material, questions about



jobs and questions about life that everyone struggles with in their formative years.

"I was in their shoes not too long ago, and I try to remember that," he said.

In addition to encouraging open communication, he also greatly supports the lab's goal of adding more practical content to the mechanical and aerospace engineering curriculum.

"Our students are now able to add value the very first week on the job because of the judicious balance of analytical skills and practical experience obtained," he said. "Feedback from industry has been overwhelmingly positive."



Mike Braddock

Mike started learning the benefits of practical experience at a young age while working with his father in their home shop. While attending UF for his B.S. and M.S. in ME, Mike spent time volunteering at machine shops learning about manufacturing to complement the knowledge he was learning in the classroom.

In search of additional experience, Mike became involved with the Society of Automotive Engineers extracurricular student design team project as an undergraduate, which led to his current position as the program's faculty adviser.

"I think student projects add tremendous value to the students' education," he said. "These projects give the students a chance to apply what they've learned in the classroom, step out of their circle of comfort and fail."

Failing might sound harsh, but Mike believes having the opportunity to take risks and learn from mistakes is a valuable experience.

Mike loves working with students who enjoy learning — especially those who demonstrate their interest by showing up when it's not mandatory or getting involved in extracurricular student projects. He said working with these students to find their passion is tremendously rewarding.

"I enjoy the relationships formed with the students the most," he said. "Being able to teach the students engineering knowledge and skills is great, but being able to talk with them as a friend about the challenges they are facing in life, about their future and about God is hands down the best part of my job." ▲

Students seek knowledge, experience overseas



Nicholas Dunbar poses for a picture in Ghent, Belgium. According to Dunbar, “Over in Belgium, everybody knew everybody who knew everybody.” He loved the sense of community he experienced while abroad.

As a UF Ph.D. student, **Nicholas Dunbar** worked on biomechanics and played baseball in Belgium. He was able to take advantage of this opportunity by co-oping with the European Center for Knee Research for six months in the spring and summer of 2010. His mechanical engineering studies centered on knee replacements, so in working at the center, he was able to perform and publish research relevant to his academic pursuits.

While Dunbar worked as a full-time employee, he also served as the assistant coach for the Leuven Twins baseball team. He spent his days working, practicing baseball and even participating in karate.

By joining the baseball league, he had the opportunity to travel all over the country and make new friends. When he had free time, he’d eat dinner on the terrace or go for a run over snowy European hills.

Dunbar isn’t the only MAE student who’s gone abroad — 13 MAE students traveled to other countries in 2011, according to the UF International Center. Students either co-oped or took classes in a variety of subjects.

When Dunbar was considering whether he should go abroad, he thought about how he’d be traveling to a place he’s never seen, living on his own and working in a high-intensity environment.

“The mystery of the unknown appealed to me,” he said. “I was just excited to have that change of pace in my life — to live somewhere new and experience a new culture.”

He plans to go back to Belgium this summer to continue the studies he had set up the first time he was there.

“It was a very well-published, top-of-the-line group of people I was able to work with,” Dunbar said. “It really gives you real-life work experience. That’s really what made it worth it to go.”

Because he was able to make connections and build up his CV, he’s been attending conferences in California, New York and London while also having the opportunity to publish more of his work. He says this wouldn’t be possible so quickly if he hadn’t gotten his opportunity to co-op abroad.

MAE student **Gonzalo Girado** is currently taking humanities and sociology courses in India. When he’s not in class, he spends time doing community service at schools and recycling centers.

“Going abroad is a great experience since it gives you a global perspective and makes you more aware of different cultures,” Girado said.

While in India, he’s noticed that many large companies — like Siemens, Accenture and General Electric — are multinational.

“I think that being more of a global individual puts you ahead of the competition when looking for jobs,” he said, “and it’s also an awesome personal experience.”

Victor McCormack took 12 credits with the Semester at Sea program, which involved traveling on a ship that had 9 different countries as destinations. He was able to see the Great Wall of China, explore the Amazon and go cage diving with great white sharks.

“When you take classes at campus, you are confined within the walls of the classroom,” McCormack said. “Study abroad and those walls get taken down. You learn the impact of technology on the rest of the world.”

He said that on his travels, he was able to see how engineering can really have an impact on the world. He now has ambitions to join Engineers Without Borders or take a year off to help provide health care and safe drinking water technology to other countries.

All-in-all, McCormack said the trip was the best experience he’s ever had.

“I would go back in a heartbeat,” he said. ▲

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a supporting rider with Exergy TWENTY12, one of the best cycling teams in the nation.

After having graduated UF in the fall, Crowell trains and travels to compete with her team.

Recently, Exergy TWENTY12 won the San Dimas Stage Race in California, in March, and Crowell took first place in a Cigar City Brewing Criterium and Street Festival race in Tampa on March 31.

One of Crowell's main goals is to qualify for the 2016 Olympics, which is what she tells people who ask about her post-graduation plans.

"I'm always skeptical of what people are going to think of it," she said, though her UF professors have been very supportive of her decision.

She said applying for U.S. cycling teams was similar to applying for engineering positions and equally as stressful. You have to tell recruiters your strengths, experiences and successes. Then, if you apply to 10 teams, you might hear back from a handful.

"Exergy is a big step up for me," she said. "It's an honor to be working with teammates who are going to the Olympics."

She enjoys the extraordinary amount of focus involved while racing and the surreal experience of feeling your adrenaline pumping and somehow forgetting about the pain in your legs.

"That's why I do it," she said, "for that feeling when your legs feel good and you can just ride away from everyone."

But what keeps her coming back is the strategy involved with the sport.

"It's very much an intellectual sport as it is a physical sport," she said. "The strongest person doesn't always win. Even after 10 years of racing, I'm still learning how to execute new strategies," Crowell said.

Cycling is the chess of the athletic world, she said; while the cyclists might just appear to be riding as fast as they can, all kinds of planning and tactical maneuvers are involved.

The more she learned about cycling, the more interested she became in mechanical engineering. When she learned about aerodynamics in class, the topic became more real to her because it was such an important part of the racing she did so often.

Once she joined teams, she realized just how much she knew about the mechanics of the sport, especially when it came to the gauges cyclists used to see how much power they had expended.

"A lot of the cyclists get on their bikes, and they're like, 'What's a watt?'"



Jackie Crowell

They might have a relative idea, but Crowell knows a watt is a joule per second, which is a unit of power that corresponds to how much energy she's exerting.

Because she knows so much about bikes now, Crowell thinks she could make a difference when it comes to bicycle engineering.

She might combine her two major interests and work for a bicycle or bicycle-parts manufacturer once her professional cycling career ends.

Until then, she'll be traveling the world, competing against world-class cyclists and preparing for what might lie ahead in 2016. ▲

Students create robot for NASA Lunabotics competition

UF engineering students will be participating in NASA's Lunabotics Mining Competition for the first time in late May.

Teams must design and build robots capable of collecting “moon dust” and depositing it in a reservoir. The idea is that the robots should be able to be sent to the moon to collect actual moon dust. Teams earn points based on how much moon dust is collected and lose points for how much the robot weighs. Whichever team collects the most points wins the competition.

The UF team doesn't just strive to make the best robot — it also strives to make an autonomous one, which would award them with a significant number of additional points.

About 20 UF students, including mechanical, computer and electrical engineering majors, have been actively working on the project.

Chad McPherson, a mechanical engineering junior, helped design the robot. He's built one robot in the past when he took the Design and Manufacturing class.

“That was kind of the basis for being interested,” he said, “because I enjoyed it the first time around.”

He said that UF has a great robotics curriculum, and because the competition is at the Kennedy Space Center, it's close by and definitely worth participating in.

“We saw it as an opportunity to showcase our engineering talents within the state of Florida,” he said. ▲

Student Updates

Congratulations to **Antonio Diaz** and the UF Engineering Team for winning first place at the Cuba Infrastructure Challenge 2012.

The following MAE students were selected as 2012 University Scholars. This program pairs UF undergraduates with faculty members to provide undergraduate research experience.

Luis Alvarez
Andrew Cheung
Abigail De La Pena
Thomas Easley
Gabriela Hughes
Leland Jones

Neil Mason
Anthony Nardi
John Phillips
Justin Stauber
Thomas Underwood
Chen Ying

The following MAE students were selected as 2012 Lockheed Martin Engineering Scholars.

Matthew Caesar
Carlos Caballero
Blake Richards

The following MAE students were selected as 2012 Progress Energy Engineering Scholars.

Neil Tidwell
Jonathan Nunez

Congratulations to MAE student **Sarah Smith** and BME students **Ray Kozikowski** and **Jennifer Lee**, who placed as finalists in the Prize for Primary Health Care competition. The team received \$10,000 for their work in developing a new spectral technique that would help identify cancerous oral tissue. Their faculty sponsors are **Brian Sorg** (BME) and **David Hahn** (MAE).

Congratulations to **Rhett Rampi**, who was awarded the MAE Outstanding Senior Award, and **Laura Rose**, who was awarded the MAE Student Leadership Award.

Congratulations to **Anup Pandkar**, who was awarded the Knox Millsaps Outstanding Teaching Assistant Award.

Congratulations to **Nicholas R. Fischer**, who was awarded the MAE Graduate Student Research Award.



MAE student Paul Chestnut (left), former ME student from UCF Amanda DePreta, U.S. Congressman Daniel Webster (8th District, Florida), and MAE student Laura Rose pose for a photo during the AIAA Congressional Visit Day.

MAE's very own **Abigail De La Pena** received a first place 2012 CASE award. De La Pena, a mechanical engineering senior, collaborated with **Jarrod Tredway**, a graphic design major, for the Creativity in the Arts and Sciences Event at UF.

De La Pena said her research involved analyzing the collective mechanical behavior of endothelial capillary networks. Tredway worked to portray the research with a poster, video and 3D model of her experiment.

"I was overjoyed to find out I won first place," De La Pena said. "I was even happier that everyone really enjoyed the exhibition and learned about my research project in an interesting way."

De La Pena has always been intrigued by engineering, biology and medicine.

"I decided to study mechanical engineering because of the wide range of knowledge I could learn and its many applications," she said.

She also chose to minor in biomechanics to make her studies better match her interests.

"I love being a student at the University of Florida," she said. "UF has many great programs and is a great institute for research."

De La Pena will continue researching during the summer, where she'll be working in Belgium at a research institute. She'll also perform research at UF next year while being funded by the University Scholars Program. ▲

UF ASME hosts regional professional development conference



Attendees participate in a conference design competition.

The UF chapter of ASME hosted the 2012 Student Professional Development Conference on March 30, March 31 and April 1.

More than 200 students from universities across the southeast attended the conference and participated in regional officer elections, design competitions and club development.

"The UF ASME student organization has a strong reputation for putting on great conferences," said **William Lear**, ASME's faculty adviser. "The conference was one of the best I've seen."

Lear said there are many benefits for both the hosts and participants of such an event. Attendees had the opportunity to interact and network with professional mechanical engineers, receive professional insight and mix with leaders from other ASME chapters, thus promoting the exchange of ideas about improving leadership.

The conference offered these and other experiences that could help improve participants' future careers.

"The many social activities promoted a spirit of camaraderie that should carry into their professional lives," Lear said. ▲

Faculty Updates

Congratulations to **Prabir Barooah**, who won a first place 2012 ASEE-SE New Faculty Research Award.

Congratulations to **Skip Ingley**, who was awarded the 2011-2012 College of Engineering Teacher of the Year Award.

Congratulations to **Scott Banks**, who was named MAE Teacher of the Year.

Congratulations to **Warren Dixon**, who was chosen as a 2012 UF Research Foundation Professor.

Congratulations to **Nam Ho Kim**, who was elected as an Associate Fellow of the AIAA.

Congratulations to **Anil V. Rao** (MAE) and Co-Principal Investigator **William Hager** (Mathematics), who were recently awarded a three-year contract from the Defense Advanced Research Projects Agency (DARPA) to develop a new computational framework for the numerical solution of nonlinear optimal control problems. The total amount of the award is \$986,684.



Lt. Gov. Jennifer Carroll (center) visited UF on April 6 to help unveil SwampSat, a 4-inch-cubed satellite created by the Small Satellite Design and Development Lab directed by Dr. Norman Fitz-Coy. The device will test out a new kind of attitude stabilization system — developed by engineers at UF — during its launch in July 2013.

Alumni Updates

Bryan Hood, who graduated in Spring 2011, is now a graduate student at the Carnegie Mellon Robotics Institute. During his undergraduate years, one of his papers was published in the journal “IEEE Sensors” February 2011 issue. He also presented his work at the IEEE Region 3 SouthEastCon and won 3rd prize. He’s currently working toward his Ph.D. in robotics.

MAE alumnus **Erik Elzinga**, who graduated in 1988, was hired by SafeWorks to fill the role of Vice President – Engineering with global responsibility. His position involves emphasis on new product development for Power Climber, Power Climber Wind and Spider brands. Prior to joining SafeWorks, he worked with Terex Aerial Work Platforms. He studied mechanical engineering.

MAE alumnus **Kenneth Newton**, who graduated in 1989, was named the director of service delivery for the NASA Shared Services Center. He will be responsible for helping the executive director manage the NSSC and for providing leadership to business and technical functional areas of human resources, IT, financial management and procurement services. He’s worked with NASA for 22 years. He studied mechanical engineering.

Recent MAE graduate **Stephen Kimball** was commissioned as an Ensign in the United States Navy. While at UF, he earned bachelor’s degrees in both aerospace and mechanical engineering. He has orders to Pensacola, Fla., where he’ll train as a Naval Aviator.

Teaching fellows initiative proves successful

MAE would like to recognize **Philip Jackson** (left) and **Alexandra Coppe** (right) for their great work as teaching fellows for the department.

The first semester of the teaching fellows program proved to be a success and was implemented as a result of increased MAE enrollment. Recent Ph.D. graduates Jackson and Coppe were selected to teach classes and thus help cut down on class sizes.

Coppe, who taught Introduction to Numerical Methods, loved teaching and said that her favorite part was interacting with the students, including during study sessions and office hours.

"I think the fact that we are closer in age helped them relate more to me and hopefully helped them open up to the material and make it somewhat less scary," she said.

Because the fellows' sole job is teaching, they were able to devote a lot of time to the students and their questions.

"I frequently noticed students in their offices," said MAE chairman David Hahn, "and the feedback that I received from a number of students was very positive." ▲



Philip Jackson and Alexandra Coppe



David Hahn (center) poses at the Annual Awards Banquet with Outstanding Alumnus Award winners, from left: Carl Meece (P&W and Swagelok), Gary Miller (Exactech), Byron Knight (USAF), Roberto Garcia (NASA), William Gattle (Harris Corp.). J. Stephen Elliott (E2M Corp.) was also recognized and was unable to attend.

Alumnus works at SpaceX, passes on knowledge to interns



Neil Hicks shakes hands with President Barack Obama during a visit to the launch pad.

Neil Hicks, who graduated in 1998 with a mechanical engineering degree, spent 17 years as a NASA shuttle technician. He spent several more years taking UF MAE classes and working as a launch propulsion engineer.

Then he joined SpaceX.

"It's been a total adventure ever since that day," Hicks said.

SpaceX is a company striving to make launch vehicles that will increase the reliability, efficiency and cost-effectiveness of space travel.

Established in 2002 by Elon Musk, the founder of PayPal and the Zip2 Corporation, SpaceX has developed brand new launch vehicles and spacecraft and has been awarded COTS funding by NASA to demonstrate delivery and return of cargo to the International Space Station.

NASA has hired SpaceX to take over the job of transporting cargo to and from the space station now that the Space Shuttle is no longer flying, and last year the company won another NASA award to start upgrading their vehicles to carry astronauts.

The SpaceX team is developing spacecraft different from the shuttles of the last 30 years, and by using private, commercial transport, they're aiming to send vehicles to the International Space Station and even to Mars down the line.

"There's a lot of engineering to accomplish," Hicks said. "We're setting the path for the future of aerospace."

He said that SpaceX is about using research and out-of-the-box thinking to solve problems. As long as the science is sound, you can be creative with your solutions.

"You don't sit back and think, 'How did somebody else do it?'" he said. "You can figure out an even better way."

When Hicks started, he designed the launch pad fluid systems. Now he's the fluid systems and pad operations manager and hires three interns per semester.

Having such a good educational experience at UF has led him to choose a few

interns from the MAE department in the past. He said UF has top-notch fluid systems and thermodynamics programs and that when students graduate, they have a huge number of capabilities.

"When I see somebody with a high GPA from Florida, I know they have to be pretty sharp individuals," he said.

While taking classes at UF, he appreciated his professors, who didn't water-down the material or let students get by with bare-minimum effort.

"That's how good engineering is — it's pretty stressful," he said. "You have to learn how to manage it and deal with it, and the University of Florida did a very good job at that."

When Hicks hires interns, he uses them as full-time engineers and teaches them how to operate the systems on the launch pad. He said the internship is a great experience, and that everyone who works at SpaceX is really science-oriented.

"It allows you to be creative, allows you a lot of freedom to design and act," he said. ▲

Alumnus earns department chair position at South African university



Dr. Venter

When Gerhard Venter was going to school in South Africa, he dreamed about continuing his studies in the United States.

"As a young undergraduate student, I sometimes felt isolated from the rest of the world," Venter said, "and it was a wonderful opportunity to be able to go to the U.S. in 1994."

Venter is a UF alumnus who now serves as the department chair of the Department of Mechanical and Mechatronic Engineering at Stellenbosch University in South Africa. He credits his studies at UF with leading him to his current profession.

However, when he first arrived in the U.S., he got his master's at Virginia Tech and was taught by Professor Rafi Haftka, who helped form Venter into the researcher and engineer he is today. Venter was presented with the opportunity to work on his Ph.D. with Haftka at UF, so he decided to attend the university.

"Professor Haftka was a wonderful mentor who made a powerful impact on both my academic and personal life," Venter said.

Venter's experience at UF was very positive. He said his education helped prepare him for the challenges and opportunities he encountered in his professional life.

"The international network of researchers and collaborators that was formed during my stay at UF has been invaluable throughout my career," he said.

After earning his Ph.D. in 1998 in engineering mechanics, Venter got a job at a small research and development company where he continued his work in multi-disciplinary and structural optimization.

He greatly enjoyed working in industry and getting the chance to continue his research. He did so for eight years until an opportunity arose at Stellenbosch University.

"It wasn't difficult to accept an academic position where research would be more integrally part of my work experience," he said.

Taking the position meant he'd have the chance to be closer to his family in South Africa, so he became an associate

professor in 2006 and was promoted to full professor in 2008. It was only after his academic appointment at Stellenbosch University that he realized how much he enjoyed teaching.

He still teaches now that he's chairman, but his main responsibilities involve taking care of the day-to-day issues and creating and implementing strategic plans for the

future of the department. He ensures that the high academic standard of the department is maintained.

"It's thrilling to be part of a highly motivated team that helps prepare our students to fulfill their place as young researchers and engineers," he said. ▲

"The international network of researchers and collaborators that was formed during my stay at UF has been invaluable throughout my career."

— Gerhard Venter

Alumnus Walter Rose bequeaths \$600,000 for professorship

Understanding the importance and need for professorships in the MAE department, Walter Rose, BME 1965, has provided \$600,000 in his estate plans to establish one. The Walter E. Rose Professorship in Mechanical & Aerospace Engineering will provide salary, research support and resources for program development for a deserving faculty member.

Rose, who is very grateful for the education he received at the University of Florida, said, "I was successful because I had a chance to get a good education at UF, and I want the college to be excellent and more people to be able to go there."

Professorships allow the department to recruit and retain the nation's brightest and most talented professors and researchers who will impact generations of students to come. Currently, MAE has one Eminent Scholar Chair,

three named professorships and another professorship bequest. With 54 faculty members, the need is great.

Rose, an operating partner of Brookstone Partners, is responsible for the origination of transactions and advising portfolio companies on key initiatives and strategic planning. Prior to joining Brookstone, he was president and CEO of Rostra Technologies, which he founded in 1982.

Rostra Technologies acquired companies under Rose's direction, including International Foils, Gibraltar Packaging Group, Rostra Precision Controls, Rostra Tool and Rostra Vernatherm. In each case, the acquired company was built up through organic growth and synergistic add-on acquisitions.

Prior to founding Rostra Technologies, Rose ran major divisions and companies for ITT and Thomas Tilling Inc. In addition to his bachelor's degree from UF, he holds an MBA from New York University. ▲

Goodrum establishes memorial fellowship for late husband

Jeanette L. Goodrum, of Midlothian, Va., established the Richard W. Goodrum Memorial Fellowship with a gift of \$100,000.

The Goodrum Fellowship will be awarded to graduate students in MAE, with a preference given to veterans of the U.S. Military and/or the children of veterans of the U.S. Military.

Goodrum's generous contribution impacts the department in a number of ways. Fellowships increase MAE's ability to recruit the best graduate students from an extremely competitive national pool.

They also provide financial support and hands-on experiences for graduate students, who ultimately impact the quality of education for all students through their teaching and research activities.

The late Richard W. Goodrum established the Inez Culp Goodrum Scholarship Fund in honor of his mother in the College of Engineering in 1997 for U.S. students with financial need.

"He always liked to help people if he could," Goodrum said, "so I thought this would be a nice remembrance of him."

Richard Goodrum, BSA 1952, BME 1957, served in the Marine Corp and U.S. Army in the Korean War. He had a long and successful 42-year career with Ethyl Corporation and Tredegar Corp. Tredegar is one of the largest global suppliers of apertured, elastomeric, breathable and nonwoven film laminates for personal care markets. Goodrum retired as vice president and chief operating officer of Tredegar Industries. ▲

HVAC Laboratory rededicated as the Thermal Sciences Laboratory

The Wayne K. and Lyla L. Masur HVAC Laboratory was rededicated as the Thermal Sciences Laboratory in an unveiling at UF College of Engineering.

Exponential student growth in the UF Department of Mechanical and Aerospace Engineering prompted the move to the Thermal Sciences Laboratory.

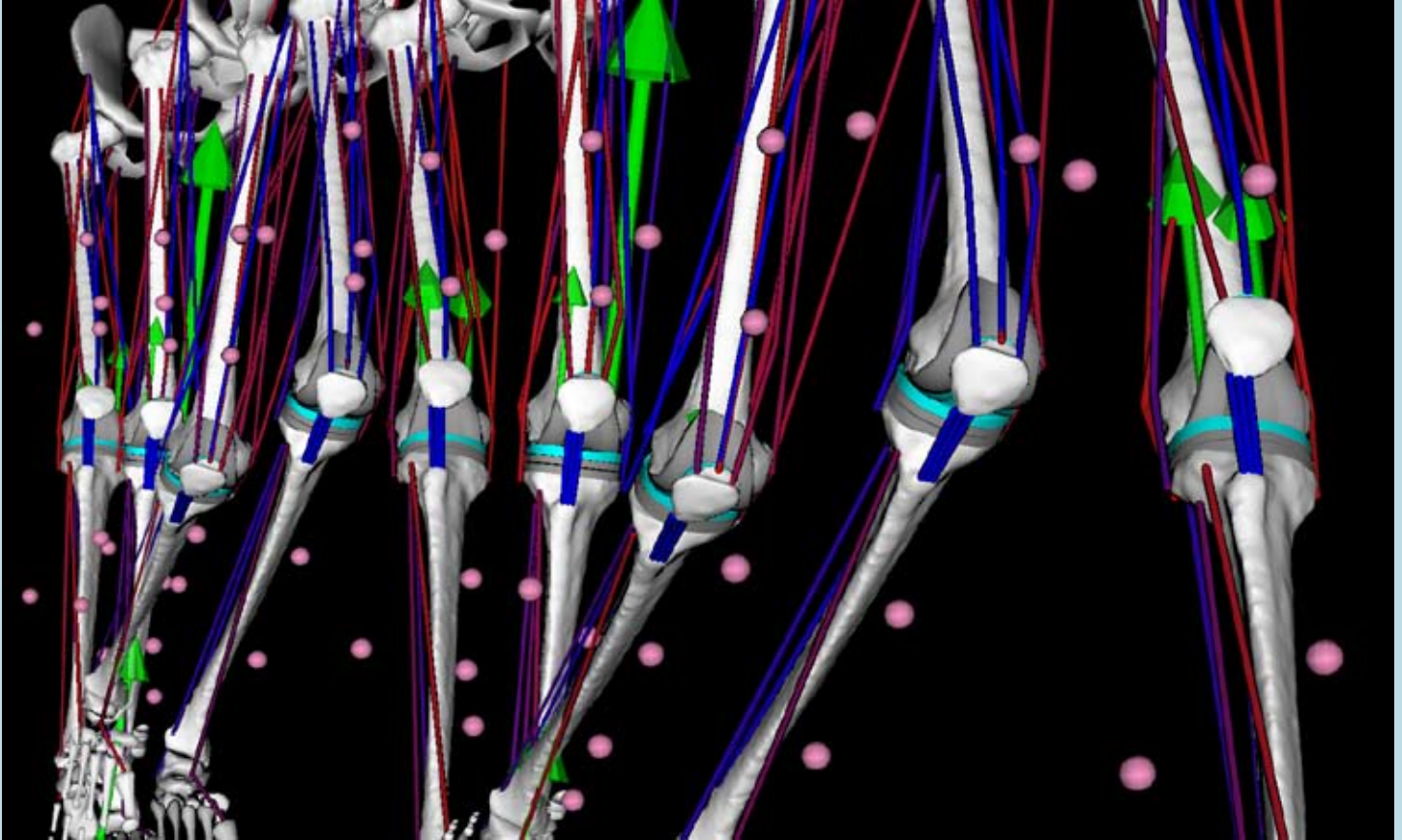
"The MAE Department is delighted to recognize the Masurs for their generosity," said David Hahn, chairman and professor of Mechanical and Aerospace Engineering. "The Masur Thermal Sciences Laboratory is a critical component of our ability to provide hands-on experiences for our students and to educate the next generation of engineers for industry, research and academia."

Courses conducted in the Wayne K. and Lyla L. Masur Thermal Sciences Laboratory provide students the opportunity to apply their knowledge of thermodynamics, fluid mechanics and heat transfer to working equipment.

Wayne Masur, a 1962 UF mechanical engineering graduate, is a professional engineer. He is also the former vice chairman of Equitable Bank and was one of its founding members in 1987.

He has offices in Miami, Fort Lauderdale and Fort Myers, where he was one of the largest developers of commercial and residential properties. His wife, Lyla, is active in charitable work in Fort Lauderdale and is a graduate of the Northwestern School of Music.

The Masurs also have estate plans to establish the Wayne K. & Lyla L. Masur Professorship and the Wayne K. & Lyla L. Masur Fellowship in the UF Department of Mechanical and Aerospace Engineering. ▲



This is a neuromusculoskeletal computer model of a subject implanted with a force-measuring knee replacement. Model created by Jonathan Walter, a Ph.D. student in Dr. B.J. Fregly's Computational Biomechanics Lab as part of a multi-institution research project funded by the National Institutes of Health. J Orthop Res, 30:503–513, 2012. This material is reproduced with permission of John Wiley & Sons, Inc.

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