Hello everyone. I hope Dead Week finds you lively and carefree. We’re wrapping up the Fall 2012 semester, and my, has it gone quickly! Engineering Student Council wrapped up the year with the Order of the Engineer, and we’ve already started planning events and projects for the spring semester. As always, we thank the Engineering clubs and organizations for their time and effort at this semester’s events, and we look forward to working with and representing you this spring!

In this issue of the newsletter, you can hear directly from students as they answer questions about their research experiences and read an article on the research opportunities at Iowa State, written by the Associate Dean of Research.

Good luck on your finals, and congratulations to those who are graduating!

Your ESC VP of Communications
Brian Fuchs

ESC Quick Updates for Presidents

Some important dates for the upcoming semester:

- Next semester’s General Meetings are scheduled for the following dates:
  - January 22nd
  - February 13th
  - March 12th
  - April 9th
- Allocation Presentations will take place on February 4th and 5th
- The Spring Engineering Clubfest is tentatively scheduled for January 24th, location & time TBA.
- Youth Event Authorization Instructions can be found on the ESC website at: [http://www.engineering.iastate.edu/esc/resources/documents/](http://www.engineering.iastate.edu/esc/resources/documents/)

To see a complete calendar of events, check out the [Events page](http://www.engineering.iastate.edu/esc/resources/documents/).

As always, if there’s something you’d like to see in the newsletter or on the website, please send an e-mail to [isu.esc.vpcomm@iastate.edu](mailto:isu.esc.vpcomm@iastate.edu).
We asked these students about their undergraduate research experiences:

**What is it that you research, and who do you research with?**

Bailley: I have been working on several different research projects including algal biofuels, swine manure composition and... techno-economic analyses of multiple biorefineries [with] Dr. Kurt Rosentrater.

Sam: I work in the Alloy Solidification and Physical Metallurgy Group under Dr. Ralph Napolitano.

Ryan: I am currently working with Dr. Michael Kessler on polymeric composites.

Linda: I have been working with Dr. Amy Kaleita for about 3 years now. The last large project I worked on was about whether or not soil microbes exhibit the same spatial patterns as soil moisture does.

**How did you get involved in your research?**

B: I had always thought that I wanted to do research, so I told my adviser this. She emailed my resume out to several faculty members who hired students for research work. I then met with Dr. Rosentrater, talked with him and the next semester I started working for him in the lab with transforming algae into a biofuel.

S: Dr. Napolitano began the project in the fall of 2010 and immediately solicited applications from undergraduate students in the MSE department. After interviews I was selected to work on the project.

R: The beauty of having an extensive research background is that getting involved in future projects is like a domino effect... After my first research project with the non-destructive testing of composite armor, I had gotten involved in programming control algorithms for Unmanned Aerial Vehicles... After dabbling in health areas, I returned to military related research with my project at the Center of Nondestructive Evaluation... All of these research projects eventually lead to my internship with 3M this past summer. I had the opportunity to work independently in a laboratory setting, and I tested methods for enhancing the performance of bonded wheels. This experience lead me to my current project with Dr. Kessler, which deals with polymeric composites.

L: Some opportunities that my research has led to have been the opportunity to go to graduate school, funding to attend conferences, and the opportunity to work with people outside of my own discipline and learning about new topics.

**What opportunities has your research led to, and/or what do you hope to do/gain from your research?**

B: I had the opportunity to travel to the ASABE International Conference to present a poster on my research. This was a great experience to talk to others in the agricultural and biological systems engineering field about my research work. Next summer, I will be presenting a technical session at the next international conference and I could not be more excited!

R: The beauty of having an extensive research background is that getting involved in future projects is like a domino effect... After my first research project with the non-destructive testing of composite armor, I had gotten involved in programming control algorithms for Unmanned Aerial Vehicles... After dabbling in health areas, I returned to military related research with my project at the Center of Nondestructive Evaluation... All of these research projects eventually lead to my internship with 3M this past summer. I had the opportunity to work independently in a laboratory setting, and I tested methods for enhancing the performance of bonded wheels. This experience lead me to my current project with Dr. Kessler, which deals with polymeric composites.

L: Some opportunities that my research has led to have been the opportunity to go to graduate school, funding to attend conferences, and the opportunity to work with people outside of my own discipline and learning about new topics.
Student Panel: Research

Continued from page 2.

What do you find most rewarding about the research you do?
S: When something finally works or when a relationship is finally elucidated the feeling of contributing to original research is absolutely rewarding. Also, the ability to apply knowledge from the classroom directly, as well as to learn in the research lab to supplement my classes.
R: I like research because it allows me to explore concepts that are not covered in the classroom. In addition, I get a sense of pride in being well-versed in cutting-edge technologies.
L: Having some independence to work on a complicated issue.

Do you have any advice for students who are currently looking for research opportunities?
B: Find a professor that is willing to work with you and teach you along the way! Be able to have a conversation with them.
S: Seek out opportunities. Ask your advisor, talk to professors in the department, and with scientists at Ames Lab about the research they do. Even if they don’t have a position immediately available, they will remember motivated students when they do.
R: Talk to faculty during their office hours. Before meeting with a professor, be sure to do some background reading on his/her projects. Professors love students that take a pro-active approach in getting acquainted with the research going on.
L: If you are interested in doing research, find a professor and a topic that you are interested in and just ask. Sometimes professors have funding and opportunities available that may not be publicized.

Order of the Engineer

ESC recently hosted the Order of the Engineer Ceremony for seniors graduating this semester. Listed below are the students honored at the event. ESC wishes you, and all those who are graduating, luck and success in your future endeavors!

Dianna Ralston
Samantha Powell
Eric Blomgren
Pavel (Pasha) Beresnev
Andrea Fors
Kelley Voss
Clark Ennis
Jared Weatherall
Jake Trullinger
Michelle Bonner
Jack Eliker
Jessica Mueller
Jacob Wiedemeier
Brad Nelson
Dylan Dorsey
Kok Aun Chee
Nicholas Mann
Rachana Kaul

Birutawit Zeleke
Courtney Hazlett
Amber Hilderbrand
Mya Easaw
Rajin Olson
Vincent Lilenthal
Kelsey Knief
Dakota Allen
Robert Dalluge
Carlton Davis Jr.
James Carey
Cody Hoover
William Petersen
Diego Camargo
Akmal Hakim Sazalli
Nur Subeli
Halimatun Zainuddin
Siti Hajar Ariffin
Nur Naim Mohammad Salleh
Melissa Slagle
Anthony Simon
Kyle Lensch
Steven D. Johnson Jr.
Azhar Bujal
Kara Ekholm
Jenny Carda
Dao Yan Lim
Wonjune Mah
Michelle Schumacher
Mathew Sleiter
Jacob Williams
David J. Hoffman
David Nai
Amer Aghari
Ahmad Fadhli Osman
Sam Smith
Brady Greer
Kyle Sievers
Lee Yocum
Brittany Becker
Kaylyn Ludwig
Veronica Bryant
Jeremy Hanson
Erica Velasco
Claudia Martinez
Alyssa Bertelsen
Heather Schulte
Elizabeth Mally
Karen DeRocher
Brad Martin
Sarthak Mishra
Hamzah Abeer
Umair Ilyas
Aaron Schroder
Nick Mathis

Elizabeth Chambers
Emily Hansen
Cassidy LeClaire
Jeremy Vittete
Jon Burk
Cory Auringer
Timothy Bork
Paul Speed
Jon Wahlstrom
Kevin Stoll
Rawini D-Mudiyanselage
Joseph Klaes
Sarini Mapalagama
Keysha Hennings
Brett Ebert
Featured Article:

Engineering Research at Iowa State
By Dr. Balaji Narasimhan, Associate Dean for Research

Dr. Narasimhan is going on his twelfth year as a faculty member at Iowa State University, and his sixth as the Associate Dean of Research for the College of Engineering. He comes from an extensive Chemical Engineering background, having earned his Ph.D. at Purdue University and doing postdoc research at MIT, after which he became a faculty member at Rutgers University in Chemical and Biological Engineering. As Associate Dean of Research, his duties include, as he puts it, “enhancing the College’s research portfolio by helping faculty put together competitive research proposals, lowering the barriers for our faculty to successfully create partnerships with collaborators within and external to ISU, and creating forward thinking research policies and effective infrastructure that will help our faculty and students.” Dr. Narasimhan is also leading a large interdisciplinary research project nano-based vaccine delivery systems.

Research drives excellence in the College of Engineering by serving as a magnet to attract and retain outstanding faculty and students. Indeed, engineering research will play a transformational role in determining the well being of our planet and the prosperity of its people. We continuously strive to be leaders in transforming the results of scientific research into engineering accomplishment, creating new solutions to society’s problems; this is an effort that requires a seamless integration of fundamental science and engineering practice. Solutions to our society’s problems require clever engineering, and a fusion with business administration, public policy, economics, and even the science of human behavior.

Our research activities are “transdisciplinary” (i.e., transcending disciplines) and systems-oriented in nature. Our research cut across fields as diverse as molecular biology, quantum physics, energy, marketing, psychology, atmospheric and plant sciences, and medicine. We have outstanding facilities in the areas of bioengineering, renewable energy, materials science, virtual reality, and high performance computing. In addition to being affiliated with academic departments, our researchers are associated with more than 60 research centers and institutes. Additionally, a number of our faculty members are affiliated with the U.S. Department of Energy’s Ames Laboratory.

In 2011, we launched the Engineering Venture Fund to pro-actively invest in revenue-generating and mission-oriented entrepreneurship and initiative of engineering faculty teams. Accordingly, we provided multi-year pursuit funding to create three interdisciplinary initiatives with transformative impact:

- High throughput computational biology led by Professor Srinivas Aluru
- Envisioning a carbon-negative economy (led by Professor Robert Brown)
- Wind Energy Institute (led by Professor Sri Sritharan)

These initiatives include participation from all eight departments in the engineering college and five of seven ISU colleges. All the teams include external partners (companies, universities, government laboratories). Already, these initiatives have led to significant new funding in “Big Data”, blade reliability and manufacturing,
Featured Article:

A hallmark of ISU College of Engineering faculty is that we deeply value undergraduate research.

and next generation sequencing from a diverse set of funding agencies.

The College’s annual research expenditures exceeded $83 million this past year, which is an all-time record. I cannot be prouder of the innovation, entrepreneurship, and teamwork that our faculty and students have shown in achieving these accomplishments in challenging circumstances due to the economic downturn, a highly competitive funding climate, and intensive competition for the best students and faculty.

Our faculty have demonstrated strong leadership in interdisciplinary research efforts across campus. Some shining examples of our faculty’s success and leaderships are the creation of an $18.5 million NSF-Engineering Research Center on Chemicals from Biorenewables (led by Professor Brent Shanks, which was just renewed by NSF), the Center for Non-Destructive Evaluation (led by Professor Leonard Bond), the Bioeconomy Institute (led by Professor Robert Brown), and the Virtual Reality Applications Center (led by Professor Jim Oliver). Some new signatures of excellence in the College are a $3.2 million NSF-funded graduate research and training program in the area of wind energy science, engineering, and policy (led by Professor Jim McCalley), a new NSF center focused on e-Design (led by Professor Janis Terpenny), which creates new design paradigms and electronic design tools that will enhance productivity.

Finally, the College recently announced two new centers of excellence, the first sponsored by Pratt and Whitney, a company that specializes in making aircraft engines and the second funded by the Federal Aviation Administration.

According to the US News and World Report, the College ranks among the top 25% of all engineering graduate programs nationally, and most of the College’s departments rank in the top 25% of their respective disciplines. The College has recently implemented coursework-only Masters of Engineering degree programs that will make ISU attractive to industry professionals seeking advanced degrees by taking advantage of our outstanding distance education capabilities. Our graduate students are trained in a highly interdisciplinary and stimulating environment, and participate in more than a half dozen interdepartmental graduate programs. The energy, abilities, and intellectual curiosity displayed by our graduate students make this a vibrant place to learn and prepare future career paths. Their creative, problem-solving outlook fosters an environment of promise that gives me tremendous optimism as we look ahead to the near- and far-term challenges of the coming years and decades.

A hallmark of ISU College of Engineering faculty is that we deeply value undergraduate research. We recognize that undergraduate students who engage in research learn to apply what they know, develop new skills, and make significant contributions to research. These research experiences can also inform career choices students will make. All eight of our academic departments boast strong participation by undergraduate students in their research activities. If you want to perform research in the academic year, all you need to do is simply send an email to the faculty member(s) whose research programs interest you and there are mechanisms available to get started right away. A sizable number of our undergraduate students go on to graduate school and the College and the departments have established several mechanisms that help undergraduate students prepare for graduate school. For example, we offer workshops on how to prepare statements of purpose, do’s and don’ts, NSF and other fellowship programs, etc. Students in our College also take advantage of summer research opportunities provided by a wide range of sources, including the Ames Laboratory-funded SULI program and the George Washington Carver internships. In this context, our College is associated with six NSF-funded Research Experiences for Undergraduates (REU) Programs, which operate during the summer. So if you are keen on participating in game-changing research that will make our world a better place, ISU’s College of Engineering is a great place to start your adventure! Welcome aboard and enjoy the fun!