ME Vibrations

SPRING 2011

KU MECHANICAL ENGINEERING DEPARTMENT ALUMNI NEWSLETTER

A WORD FROM...

RON DOUGHERTY, PROFESSOR AND CHAIR

Welcome to the 2011 spring edition of the KU-ME Vibrations newsletter! Our editors, Jessica Fell and Molly Kinsella, have assembled a unique collection of articles which focus on the outstanding women of KU-ME - - their career choices and their accomplishments. As you know, engineering has grown with regard to the fraction of engineers who are women, but there is much to do in attaining the goal of 50% women engineers. Currently, engineering programs in the US fall between 10% and 25% female students, with faculty numbers falling between 5% and 15%. For KU-ME, we have about 13% female undergraduates, 16 % graduate students, and 22% faculty.

Inside there are articles on our undergraduate and graduate women, as well as faculty and alumni. Each of these provides perspectives from those women as to how they became engineers, who influenced them, what their chosen specialties are, their career progression, and what they plan to do in the future. In this issue, we've chosen to highlight these people in order to demonstrate their wide ranging activities and accomplishments. In addition though, we want to use these articles to show young women what they could do with an engineering degree (specifically Mechanical) and how they could change/benefit their own lives as well as those around them. Thus, we also see this issue as a great recruiting tool for young women across the country and hope that you will enjoy the articles yourself, then pass the newsletter along to promising young women who are ready to make decisions regarding their lifelong avocations.

Rock Chalk, ME Jayhawks!

WHO WAS THE FIRST KUME FEMALE GRADUATE?

We welcome any comments that you may have and certainly welcome inquiries from any potential students for KU-ME, but especially young women. We trust that you'll gain new insights through reading the articles; and, if you have information regarding the first female graduate of the KU-ME program, please help us identify that person!

Jessica and Molly

in this issue...

UNIVERSITY OF KANSAS LEARNED HALL ROOM 3138 1530 W. 15th STREET LAWRENCE, KS 66044

NOTABLE FEMALE STUDENTS

Kayla Dill

Kayla Dill is one of our top female Undergraduate students in the Mechanical Engineering Department. She currently sits on the EWB (Engineers Without Borders) committee as the secretary and is working on her senior design project, a solar autoclave, which should be completed by May of 2011. The Solar Autoclave project aims to help doctors in Zimbabwe sterilize medical instruments by implementing solar power. Her true drive while seeking her degree is to help people in the developing world. Being one of the few female students in Mechanical Engineering, Kayla is not afraid to be different or express her opinions among her peers. She advises future female students to not be intimidated or let anyone tell you that you cannot achieve your dreams.


Kayla on an EWB trip to Guatemala

Recently, Kayla worked in an orphanage in Africa during the winter break. After graduating in the spring, Kayla plans on joining the Peace Corps and will be stationed in central Asia. Upon her return Kayla plans on working for Black & Veatch starting in 2013.

Sara Rolfes

As the Vice President of Pi Tau Sigma, Sara Rolfes is another outstanding Undergraduate female in the Mechanical Engineering department. Originally from Kansas, Sara chose KU because she wanted to stay close to home. Sara developed her interest in Mechanical Engineering when she studied abroad at the University of Leeds in Leeds, England during her second year at KU. Sara has enjoyed the small community created in her major and most of the classes she has taken. She finds her most rewarding courses are ones in which students are allowed to have hands on experiences where they can truly apply themselves.

Sara is not afraid of standing out in a crowd and becoming a part of something new. As previously mentioned she is actively involved in Pi Tau Sigma Honor Society, and is a part of ASME. She is in charge of coordinating ASME members and ME students who need tutors for classes. She is also Chair of the ME Student Advisory Board and a member of Jayhawk Motorsports. Sara is also a teaching assistant for the Kansas Algebra Program where she teaches her own Math 002 section. Outside of the academic world, Sara is involved in the Sigma Kappa sorority where she sat on the Executive Board as Panhellenic Delegate, was a Recruitment Counselor and a member of the Rock Chalk Review cast last spring.

Sara has excelled in her studies as a Mechanical Engineering student. Her advice to future female ME students would be to volunteer early on in their academic careers. "It is a great way to build relationships and network with people in the field." She encourages females is to embrace the challenge of bringing diversity and a unique female perspective into the field. It can be hard to have classes with only a few females but it is important to not be overwhelmed by that fact. She also has developed relationships with the women faculty and would recommend that female students reach out to them also. Sara will be graduating in May of 2011. She has been offered a job at Exxon-Mobil and plans to start her career there. Eventually, Sara would like to get a Masters in Engineering or a Masters in Business.


Sara hard at work in the FSAE shop

Erin Lewis

We are proud to have Erin Lewis as a Mechanical Engineering graduate student as she is one of the 2010-2011 Women of Distinction at KU (http://www.etwrc.ku.edu/~etwrc/calendar/wod-1011/). She is always quick to volunteer to help out in the department and has had great success at this University. Erin was initially drawn to Mechanical Engineering after she tore her ACL in an athletic accident. Erin, originally from Southeast Kansas, was interested in Biomechanics and after visiting the labs here decided to pursue her degree at the University of Kansas. Erin finds Biomechanics most rewarding in that it can impact people's lives and change them for the better. While her studies have been her primary focus, Erin has learned that one of the best things in academics is for students to build relationships with Professors and contacts outside the classroom.

Erin thinks that one of the most fun things about college is meeting people from different majors. She has enjoyed becoming friends with her academic peers and taking many classes with them. Erin is also involved in student government for Engineering. As one of the few females in a male dominated field, Erin would advise other women to be empowered to join the ranks of this major. "Women are driven and can work just as hard as men." She believes it is important to develop professional relationships with professors who can enhance your academic career along the way.

There have been people that have told Erin she could not make it in Mechanical Engineering. At first, she says, they looked at her like a statistic while not taking her seriously, yet she has continually succeeded. She is a strong person with a Christian background. She has great relationships with her friends and family and has a passion for the field of Biomechanics. Erin is on track to complete her PhD in Spine Biomechanics in 2014. Erin was also recently engaged to Drew Mannen. Her future plan for engineering would be to someday own a biomedical testing device company.

Kayla Klein

Kayla Klein is another notable Mechanic Engineering graduate student. She originally became interested in Mechanical Engineering while studying in high school. She was drawn to math, science and physics and a college advisor suggested engineering to her. Kayla chose KU because it was close to her home and family. After taking Intro to Engineering, Kayla decided that this was the right field for her.

Kayla finds Mechanical Engineering unique because each student is required to take the same courses. Students in turn are able to develop relationships with each other. Some of Kayla's closest friends are in Mechanical Engineering and she considers them to be her second family. Kayla is a hard self-proclaimed perfectionist and an extremely smart woman. She gets everything done in a timely manner and is a well-respected graduate student. However, the road to success has not been easy for Kayla. She has had to work extremely hard and finds a personal life hard to balance at times.

Kayla is involved in the BIOE society and student council. She is currently a Graduate researcher for Dr. Romkes and plans to later apply for a PhD. One regret, and her advice to students, would be to apply for as many scholarships as possible. "Sometimes it may seem like a daunting task but there are a lot of people who would like to give money to hard working students," she advises.

Over the years, Kayla has had an extremely successful academic career and is looking forward to her professional career. Kayla is currently interning at Honeywell and also working as a GTA. Upon completing her Master's degree, Kayla would like to work for a company, but also still continue to be involved in research or stay at an academic institution.

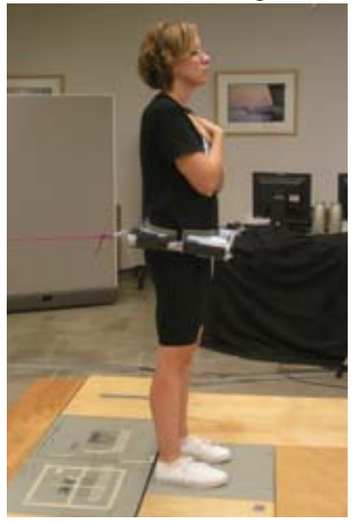
Molly McVey

The proud mother of newborn baby Billy, Molly McVey is now taking on the challenging task of motherhood while completing her PhD work at KU. Although it might seem like a lot to handle, Molly excels in both areas of life and considers her work, both at home and school, to be incredibly rewarding and enjoyable.

While Molly tested the waters in medicine and other fields of engineering, she eventually made her way to Mechanical Engineering after taking an interesting course with Dr. Yimer. So interesting in fact that it caused her to change her major! Dr. Yimer led her, but Prof. Umholtz encouraged her to stay. In her junior year of study, Molly says Prof. Umholtz saw something in her that she didn't see herself. "Considering I am now working toward a PhD in Mechanical Engineering and love what I am doing, I think it was the right decision!"

Molly is currently involved in research that studies the biomechanics of human balance- more specifically in people with Parkinson's disease that have a high risk of falling. In her research, Molly has created a mechanism to actually pull people off of their balance in order to study their response using temporal, kinematic and kinetic parameters. It is her long term goal that they can use this research to develop a more sensitive way to assess fall risk in Parkinson's patients.

Molly says she truly loves the stimulating academic environment. She adds, "It didn't take me long being out of school to know that I really missed it. I really think KUME is a special department too-great people who are so supportive of each other and make it a great place to be." She says she wouldn't change a thing about the path that brought her to where she is today, and will continue to evolve in the future, where she sees herself teaching as a tenured professor and continuing research.



She encourages other young females to definitely give Mechanical Engineering a try. Even if a course is not the exact topic someone is interested in, she encourages them to look for a niche, whether it's design aspects or problem solving. Molly says she actually didn't love the topics of most of her Undergraduate courses, but loved solving problems and understanding how systems work. Now, in her graduate work, she is solving problems that she is very invested and interested in, and finds it to be a perfect fit.

FEMALE ALUMNI

Kelley Briant Ellis

Since graduating from the University of Kansas in 2005 with a degree in Mechanical Engineering, Kelley Ellis has been working for Stryker (a medical device company) and staying active in various volunteer organizations in her community, such as YoungLife and her alma mater Delta Gamma sorority. She has also earned herself a Six Sigma Black Belt in statistics that has helped her to be a key team member throughout her career. Outside of her career, Kelley enjoys running and hiking and being outdoors as much as possible. She recently wed her fiancé, Brian, January 1, 2011 near Dallas. Here is a short Q&A interview with Mrs. Ellis.

Q: In the Mechanical Engineering Department we consider you a role model. What would you propose we do in order to involve more women in engineering?

A: "That's very humbly received. I don't think I'm a role model of any sort, but I do think that there are many women that are interested in the sciences and more specifically engineering, but they may be turned away from it because they don't see the many applications of the jobs or outcomes of those roles that would motivate them to become engineers. I think that better 'advertising' of all types of engineering positions and applications out there would better attract women to the field.

Additionally, some people, women and men alike, just think it's too hard; while it certainly isn't the easy degree to pursue, just like anything, if they surround themselves with good teachers and work hard, it's doable! I think more women just need to hear that and hear that they are wanted and NEEDED in engineering."

Q: Did you have a role model who pushed you into seeking an engineering degree?

A: "My mother is a scientist- she is a laboratory manager at a hospital, and she runs diagnostic experiments all day. I would be pretty ignorant to believe that doesn't have anything to do with my ending up in the sciences. But, to get to engineering, another very instrumental person gave me the courage to seek the degree -my high school Physics teacher, Pat Inman. She encouraged me and recognized my unique performance in physics and the sciences, and told me that I should use it to the best of my ability somehow in my future. So, I listened."

Q: What do you envision we should be doing differently to appeal to more women?

A: "We should better advertise the roles and applications of engineering that appeal to women's interests. There are so many engineering roles out there and so many needs to have women in the work force to bring the unique perspective we can bring! My eyes have been opened since I've graduated."

KUME FEMALE FACULTY

Dr. Lisa Friis

Dr. Lisa Friis is one of our notable female professors in the Mechanical Engineering department. She originally came to the University of Kansas because she was drawn to the trailblazing initiatives KU and the Mechanical Engineering faculty were making in Bio-Engineering. As a professor and researcher, Dr. Friis enjoys independence and freedom as well as knowing she has the capability to help everyday people with her research. As a professor she enjoys aiding students and seeing them grow professionally. She also finds it invigorating as she is energized by their creative and fresh ideas. The opportunities while working in a research lab enable her to virtually create an educational path in what ever she wants. While she is busy teaching here at KU, she is also active in various projects and programs.

At this time she is working on a mechanical spine model that tests implants. She is close to having her product go through commercial product validation later this spring. This device will help with spinal implants and lumbar implants for children who suffer from scoliosis, as well as being able to stimulate bone growth for patients. She is also active in the RET (Research Experiences for Teachers) program funded by the National Science Foundation, which helps to develop lesson plans about Bio-Engineering and how teachers should learn to apply science in order to solve their problems. As a female Bio-Mechanical Engineer, her advice to other females seeking an engineering degree is to not be overwhelmed by the math and science and that there are different ways for solving problems in various fields other than cars.

Dr. Friis with Kevin Colbert and Nick Tobaben

Dr. Sara Wilson

Sara Wilson is another notable female member of the KUME faculty. She was originally a pre-med major but was drawn to engineering for the diverse activities and opportunities that the major offers. Sara is a very accomplished professor and is extremely dedicated to her field of study. She is very busy but manages to balance her time between traveling to foreign countries to give speeches, research, her students and her personal life.

Sara is passionate about her career and loves that it allows her the freedom to do what she is interested in the field of research. She finds working with young, enthusiastic people exciting and loves that each day brings something new and interesting. Being a professor has allowed her the opportunity to explore innovative lines of research. She likes that one is given the ability to come up with fresh ideas that could lead to developing new companies. She finds that when doing research in Mechanical Engineering she is only limited by her own imagination, which is truly inspiring.

Currently Sara is working on a variety of topics. The first is why vibration in a work place is associated with lower back injuries and how to prevent them. She is also investigating how to prevent syringe reuse and contamination in a medical field as well as safety delivery techniques for obstetricians based on mechanics.

As a female in a male dominated world, Sara thinks that women solve problems in ways that are slightly different from men. She says women are willing to be more interdisciplinary and look to solve problems from different fields and using different methods. In order to encourage more females to consider Mechanical Engineering, Sara thinks that it is important to educate high school and grade school teachers about the careers that can come from this field and have them place an emphasis on math and science. Her advice to females considering engineering would be to design their careers around their life and tenure. She says that balancing work with life outside of Mechanical Engineering can be challenging at times, but that students in general should never let anyone tell them they can't do something.

Dr. Wilson and Bhargavi Krishnan setting up a motion capture system

2010 AWARDS BANQUET

AWARDS

PI TAU SIGMA INITIATES FALL 2009
Carols Villaneuva
Angela Smith
Aaron Joy

BIOMECHANICS EMPHASIS
Brian Boren
Dustin Bowen
Kyli Christopher
Daniel Clinesmith
Fallon Fitzwater
Charles Hernandez
Armand Heyns
Jacqueline Lewis
Nicholas Tobaben

LINDQUIST FAMILY MEMORIAL AWARD
Austin Hausmann
Thomas Hirst
Abigail Rimel
Sara Rolfes
Joseph Sandt
Yan Zhang

WELSEY G. CRAMER SCHOLAR AWARD
Joesph McCraken
Cody Moore
Michael Powell
Thomas Prinsen
John Pro
Leslie Schulte

OUTSTANDING SENIOR AWARD
Amy Erdbruegger

OUTSTANDING LEADERSHIP AWARD
Jessica Lamb

CRAMER OUTSTANDING SERVICE AND RESEARCH AWARD
Amber Markey

MECHANICAL ENGINEERING DISTINGUISHED ALUMNI AWARD
Kwang Sun Kim
Roy Edward McAlister

OUTSTANDING FACULTY AWARD
Bedru Yimer

OUTSTANDING STAFF AWARD
Carol Gonce

OUTSTANDING STUDENT HELPER AWARD
Shane Gooden

WESLEY G. CRAMER MECHANICAL ENGINEERING FACULTY AWARD
Chris Depcik

HAROLD L. KIPP DISTINGUISHED TEACHING AWARD
Albert Romkes

SCHOLARSHIPS

ROBERT M. CAREY SCHOLARSHIP
Bryce Allenbrand
Jason Carter
Isaac Chappell
Lee Clemon
Kevin Colbert
Christina Davis
Amy Erdbruegger
Evan Glidewell
Melanie Gray
Thomas Hirst
Adam Jeffries
Joshua Johnson
Aaron Joy
Madhan Kallem
Sunil Karri
Ryan King
Kayla Klein
Chenaniah Langness
Brian Larkin
Sudarshan Loya
Joshua Patterson
Jacob Pfannenstiel
Michael Powell
Anjali Sandip
Fabian Schmidt
Angela Smith
Youngting Ma
Michael Mangus
Matthew Mantyla
Amber Markey
Cody Moore
Clayton Nguyen
Ryan O'Malley
Gavin Strunk
Stanley Thompson
Eric Tobaben
Matthew Toft
Mariam Vanderhyde

LOUIS GEILER MEMORIAL SCHOLARSHIP
Nicholas Hanna
Ryan King

BAER SCHOLARSHIP
Josepth Lauth

HENRY NOTTBERG JR. SCHOLARSHIP
Thomas Prinsen

RUSSEL J. AND JAMES W. STRAIGHT SCHOLARSHIP
Kyle Combes

WILBUR E. AND MINA WYATT MEMORIAL SCHOLARSHIP
Eric Cecrle
Vitaly Kheyfets
Damon Mar
Virah Singh

JOHN CALVIN SELLS SCHOLARSHIP
Kevin Chael
Chenaniah Langness

JOHN CALVIN SELLS SCHOLARSHIP
Kevin Chael
Chenaniah Langness

BERNARD LEVINE FAMILY FUND
Dustin Bergstrom
Justin Burwinkle
Bryan Hill

GEORGE W. FOREMAN SCHOLARSHIP
Ryan Bittel
David Neidinger
Thomas Prinsen

ME SCHOLARSHIP (Mr. AND Mrs. MICHAEL NOLAND)
Evan Captain
Colin Davidson
Miles Detrixhe
Kayla Dill
Armand Heyns
Jessica Lamb
Jacqueline Lewis
Hayden Maples
Joseph McCracken
David McNally
Nimish Modha
John Pro
Kathryn Sanders
Leslie Schulte

SELF FELLOWSHIP
Molly McVey (2006-2010)
Erin Lewis (2010-2014)

2010 GRADUATES

SPRING 2010

Mark Adams
Michael Beam
Andrew Beougher
Andrew Bieger
Christopher Billinger
Ashton Bitner
Brian Boren
Alfonso Bortone
Kyli Christopher
Daniel Clinesmith
Kyle Combes
John Cover
Miles Detrixhe
Benjamin Engelbrecht
Amy Erdbruegger
Fallon Fitzwater
Alexander Gladbach
Melanie Gray
Kyle Hamer
Alexander Hanish
Luke Harmon
Austin Hausmann
Armand Heyns
Jonathan Hill
Stephen Hinton
Brandon Hursh
Michael Kuchinski
Jessica Lamb
Jaqueline Lewis
Matthew Mantyla
Diana Marcolino-Underwood
Amber Markey
Joseph McCracken
David McNally
Cody Moore
Calvin Morris
Hideki Onaga
Brian Paddock
Andrew Poulin
Michael Powell
Thomas Prinsen
John Pro
Joshua Rasa
Michael Rollins
Travis Schneweis
Leslie Schulte
Blake Slagle
John Solar
Adam Suppenbach
Nicholas Tobaben
Alexander Vincent

SUMMER 2010

Joseph Kaufman
Matthew Petty

FALL 2010

Saleh Alamoudi
Mohammed Aljohanni
Faisal Almadani
Christian Altic
Dustin Bowen
Nicholas Friling
Shane Glenn
Charles Hernandez
Michael Humphrey
Michael Juan
Patrick Reilly
Jonathan Griffith
Krista Sanchez
Bryan Strecker
Maxwell Ward

Award recipients: Amber Markey, Jessica Lamb, and Amy Erdbruegger

Mechanical Engineering graduating class of 2010

2011 ENGINEERING EXPO

On February 25-26 the Engineering Expo was another great success for KU Engineering! The Expo gave students ranging from elementary grades to high school a chance to compete in science, math and engineering events. The walls of Learned Hall were transformed into all things engineering and over 1,100 students from sixty schools attended. Each department of Engineering graciously transformed their classrooms so that student organizations could host interactive displays. Four Mechanical Engineering student organizations participated in the day: BMES, EcoHawks, ASME and FSAE. It was a great day and a lot of fun was had by students of all ages!

The EcoHawks group hosted a competition where students were challenged to design a battery powered, gravity defying car that raced on a course against other students from the area. Students from 28 teams were challenged to use a single cell battery that is rechargeable to cut down on excessive waste. The main idea was to teach young students about stainability while making cars from recycled materials and recycled batteries. The car then had to travel up a ramp in a challenge cleverly named "Uphill Battle." A Ford 1910 Model T assembly line was also a successful activity put on by the EcoHawks. They modified the scale car so that students could understand how an assembly line works in a hands on environment. The EcoHawks also hosted the smart grid display, which is a solar panel that uses stored solar energy to pop popcorn. The smart grid is one of four senior design projects where KU students are using a smart grid to model intelligent electrical infrastructure. Other senior design projects include revolutionizing the transportation industry by designing a parallel hybrid electric semi-truck at 1/12th scale, a 1/8th scale hydrogen internal combustion engine and converting a GMC Jimmy into a battery electric vehicle.

photo courtesy of the University Daily Kansan

ASME hosted a Rube Goldberg competition for their participation in the 2011 Expo. A Rube Goldberg


EchoHawks Uphill Battle Challenge


ASME mechanical advantage pulleys

Competition is something that has been around for over 30 years where many simple machines combine to do a task. Around 25 teams participated in this exciting event. Another successful competition each year from ASME is a rubber band catapult. Students make a rubber band powered catapult and launch m&m's at a target. Also, ASME took a 1956 Buick six cylinder inline cutaway engine which was powered by electricity. This gave students an opportunity to see how an engine really works from an up-close perspective and was quite a hit! There was also a display of mechanical advantage via pulleys. Young students could pick up two different size weights using pulley sets, one with no mechanical advantage and one with a mechanical advantage of 2. ASME also hosted displays of basic engineering concepts, hands on gears and bearings activities as well as an interactive composite display.


ASME Rube Goldberg displays

BMES concentrated their activities at this year's 2011 Expo events on Fun with Fungus, Dominant side and DNA Extraction. They held exhibits that showed the respiration of yeast, conducted tests to prove brain dominance and conducted activities to show students their DNA. There was a very large turnout of Expo participants in the BMES room who participated in most of the activities and talked to the volunteers about bio-related engineering. The KU Biomedical Engineering Society is a student-registered organization open to any KU student. Its purpose is to promote growth, understanding and interest of biomedical engineering and bioengineering in current society at KU. They hold monthly meetings with speakers on topics relating to the biomedical industry, research in a biomedical field and other Graduated students at KU.

FSAE, Formula Society of Automotive Engineers, is a Senior design option as well as a student group in Mechanical Engineering. Students from mechanical, chemical, industrial and electrical Engineering are working together this year to design, manufacture, build and race Formula vehicles. This year they are competing in the Formula Hybrid competition as well as the Formula SAE competitions. Their participation in the Engineering Expo gave students a chance to experience a race car. They assembled a driving simulator to give young students a chance to see what it feels like behind the wheel of a Formula SAE car. FSAE also held 'egress tests' to see how fast visitors could exit the Jayhawk Motorsports vehicles. This is one of the competitions that drivers must compete in at the Formula SAE competition. They also highlighted cars built in the past celebrating "Years in Jayhawk Motorsports Innovation" and also had displays about current and past innovations in manufacturing, engines and composites. As if all that action wasn't enough, FSAE also hosted a gravity car student design challenge where students were asked to create a car that would then race down a track. All in all, the Expo was a great success and Mechanical Engineering really did a great job representing the department to young students in the area while having fun!

ALUMNI UPDATES

Fill in this form or e-mail us at kume@ku.edu and let us know what you are doing and inform others in future newsletters!

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