ASME Cornell University

MECHANICUS

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A WELCOME FROM THE CORNELL ASME PRESIDENT

By David McCarey '12

The mission of Cornell's student section of the American Society of Mechanical Engineers (ASME) is to support students of the Sibley School by providing social and professional networking events, information about post-graduation career paths, and local outreach opportunities. To achieve this goal, Cornell ASME organizes a variety of activities each semester.

Our most popular event is the semiannual barbecue. This semester, the barbecue was cosponsored by Lockheed Martin and took place on September 22nd in Upson Lounge. Hundreds of students along with many faculty members enjoyed free hamburgers and hot dogs, talked with Lockheed representatives about career opportunities, and had a chance to win prizes in Lockheed's raffle.

Cornell ASME also regularly hosts informal undergraduate research presentations through its "Lunch with ASME" series. This event allows students who are working on project teams or performing research with a professor to develop their presentation skills while informing other students about the types of research opportunities available in the Sibley School. Keep a lookout for flyers for our next Lunch with ASME session.

Cornell ASME's most recent event was post-prelim Insomnia Cookies for students taking Mechatronics (MAE 3780). With Professor Ephrahim Garcia's approval, executive board members distributed nearly 200 cookies to drowsy students following their second prelim earlier this month.

This year's executive board consists of ten mechanical engineers ranging from sophomores to MEng students: Robert Chen, Tina Choi, Aditi Dugar, Jeffry Lew, David McCarey, Alex Miner, Nick Perrotti, Matt Scheff, Hyeon Soh, and Ricky Tse. A picture and brief biography of each of the board members is available on the organization's website (http://rso.cornell.edu/asme/). The website also contains a calendar of upcoming events and information about getting involved. Students interested in joining or who would like to suggest future events are encouraged to contact the executive board at asme@cornell.edu.

ONE ON ONE WITH PROF. SACHSE

By Christine O'Brien '12

Professor Wolfgang Sachse has been teaching at Cornell since 1970 and has recently become Associate Director of Undergraduate Affairs. I sat down with Prof. Sachse and learned a little more about his background and his role in the department.

Background: Prof. Sachse started his college career by majoring in physics at Penn State, followed by studying mechanics at Johns Hopkins. While doing research in Aachen, Germany, he learned how to ski and knew that when he returned to the United States, he wanted to live in an area with plenty of snow. The faculty and research opportunities offered at Cornell helped him make the choice to come to Ithaca.

Research: The foundation of Prof. Sachse's research lies in the implementation of ultrasonic testing. His early research included Quantitative Nondestructive Testing and Quantitative Acoustic Emission, which used ultrasonic waves to determine material properties. His latest research involves using ultrasound to determine properties of powders.

Associate Director of Undergraduate Affairs: In addition to research and teaching MAE 2020 and 3272, Prof. Sachse is also the Associative Director of Undergraduate Affairs in the Mechanical Engineering department. Besides arranging teaching assignments and managing the transfer of students into the college, one of Prof. Sachse's main goals is to improve the quality of instruction in the Mechanical Engineering school. So far, he has helped by creating a Mid-Semester Survey for students to complete. He hopes that the student feedback from the survey will help professors address any issues in the class while there is still time to make changes. Prof. Sachse strives to make himself accessible to students; he invites students to join him for lunch in Upson Lounge every Tuesday from 1pm - 2pm.

Outside Mechanical Engineering: Prof. Sachse is an avid supporter of student organizations and has acted as advisor to many clubs, including the Whistling Shrimp, Women's Fencing, and Ithaca Tangueros. As a fan of the arts, he is on the Faculty Advisory Committee for the Johnson Museum and enjoys photography in his spare time. In addition, Prof. Sachse has been dancing tango for almost ten years and is extremely involved in the local tango community.

NOTICE TO ALL READERS:

We want writers! Do you like talking to people, and then using the medium of print to tell others what you've talked about? Then this is the task for you! If you also know English, then send us an email and you can start writing!

BAJA UPDATES

By Alex Klug '13

Everyone talks about how Mechanical Synthesis(MAE 2250) is a rite of passage for mechanical engineers, how much fun it is to actually apply what we learned in class, to a product we design and build ourselves. Well, this is what Baja is, except instead of a pump they build a car, and instead of doing it once, they do it every year.

For those of you who don't know what Baja is, we're a completely student run project team whose goal is to design and build an off-road racing "prototype" to compete in international competitions sponsored by the Society of Automotive Engineers(SAE). The competitions themselves involve three days of events that challenge every aspect of each team's car. The events involve everything from design presentations in front of judges from the actual automotive industry to a four hour endurance race that pits all the teams (around 100) together on a track filled with railroad ties, mudpits, jumps, and other obstacles that test as much of the driver's durability as the vehicle's.

Though the competitions are still far away, the team has been hard at work designing this year's vehicle. Moving away from the frame and suspension model that has resulted in four top ten finishes including a first place finish in 2010, the team is overhauling everything in order to focus more on speed and maneuverability which includes the design goal of cutting 50lbs from the vehicle. To accomplish this, the team has redesigned all the parts to minimize weight and they hope to replace many of their traditionally metal parts such as tie-rods and drive-shafts with significantly lighter parts made from composite materials such as carbon fiber and Kevlar.

As the design is finalized, the team looks forward to beginning fabrication of the new vehicle. With all the design changes, the team is unsure how the new vehicle will perform, though they hope all their hard work will bring home a lot more than just an A.

RECENT ASME FUN: INFO SESSIONS AND BARBEQUE

This semester ASME has sponsored seven employer information sessions. We have seen Air Products and Chemicals, Sentrana Inc, Sensata Technologies, Gotham Consulting Partners, BAE Systems, FMC Technologies, and Turner Construction Company all come to campus seeking to hire Cornell engineers. These companies specialize in everything from nano-scale sensors to athletic stadiums and they all require mechanical engineers. Each session ranged in style as some companies focused on the very technical aspects of their work and others sought active engagement from the attendees. To guarantee the success of the information session for both students and employers ASME board members are in regular contact with the company recruiters, work with University employees to make all reservations (including ordering all those Wegman's subs and Papa John's pizzas), advertise the event, prepare the room, and welcome employers upon their arrival. This has been one of ASME's most successful semesters in regards to information sessions, and since they are the organization's primary source of funding we look forward to holding other events such as the Mechatronics' Post-Prelim Insomnia Cookies to support the students in the Sibley School. Additionally, the ASME Executive Board would especially like to thank Emily Tompkins Minturn for all her help this semester in the planning of the events.

A VISIT FROM LOCKHEED'S CEO

By Samuel Fischer '13

This past month, as a part of his visit to Cornell to give the William H. Sears Distinguished Lecture among other talks, Norman Augustine met with undergraduates in the College of Engineering in an informal question and answer session over lunch. The event, organized by Cornell University's student branch of the American Institute of Aeronautics and Astronautics (AIAA), allowed students to interact closely with a pioneer in the field of Aerospace Engineering.

Mr. Augustine has held many notable positions in both the public and private sectors. He was the CEO and chairman of Martin Marietta Corporation, later becoming the President and CEO of Lockheed Martin after the merger between Lockheed Corporation and Martin Marietta. Prior to these positions, he served as a Chief Engineer with Douglas Aircraft Company and Vice President of LTV Missiles and Space Company. Interspersed with these private sector positions, Mr. Augustine served in the Office of the Secretary of Defense as the Assistant Director of Defense Research and Engineering and the Acting Secretary of the Army. He has also been involved in numerous government committees, ranging from education to the space program to the defense industry. He is currently chairman of the Review of United States Human Space Flight Program, which was the topic of the Sears Lecture.

During the undergraduate luncheon, Mr. Augustine answered students' questions about his life, the defense industry, governmental work, and his leadership experience. He spoke of his journey from wanting to go into forestry in his native Colorado, where a high school teacher made sure he didn't waste his technical aptitude and forced him to apply to Princeton University. He talked about the defense industry's transition to more automation and the moral questions that come along with that. In between more serious questions, Mr. Augustine added in anecdotes about his experiences, including a story of his presentation on space to a classroom full of kindergarteners, complete with a phone call to Buzz Aldrin so the kids could speak to a real astronaut.

Cornell AIAA is committed to promoting the field of Aerospace Engineering at Cornell. Future events will include industry speakers, company info sessions, trips to nearby locations of interest, collaboration with local schools to get kids excited about engineering, and a design competition. To get involved in any of these activities, suggest programming you would like to see, or to be added to the listserv, email cornellaiaa@gmail.com.

ASME PUZZLE & THE FUNNIES

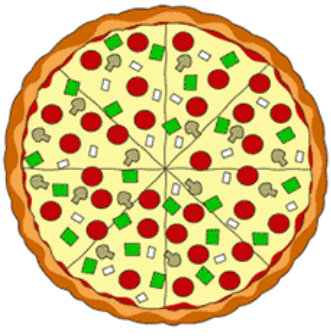
By Alex Warning, Graduate Student

ASME PUZZLE

A large field (assuming a flat Earth), is divided by an imaginary line that runs north-south. Land west of the line is worth $12/sq. ft and land east of the line is worth $3/sq. ft. There is an oak tree (take it to be a single point) growing 25ft east of the line and is enclosed by 120ft of *flexible* fencing. Flexible here means that the fence can make a smooth arc. What is the maximum possible value of the land within the fence?

Now, if instead of 120ft of fence you have 60ft of flexible fence and three straight pieces (they cannot bend) of length 10ft, 20ft, and 30ft, what is again the maximum value of the land within the fence?

The first person to submit a diagram of a fence for the first and second problem to asme@cornell.edu will receive a prize!



A pizza with depth **a** and radius **z** has a volume of:

pi z z a

A LOOK INTO SUSTAINABILITY

By Erin Rose Briggs '12

Sustainability. The long-term maintenance of wellbeing. The conservation of a balance without depleting natural resources. Interesting, that doesn't sound like something us Cornell Engineers would know much about. I mean really. Who really thinks that this kind of lifestyle is sustainable? We drink gallons of coffee a month, eat thousands of slices of pizza a semester, and pull multiple all-nighters a week. Definitely not a sustainable lifestyle. But there are some Cornell engineers who claim to be fairly knowledgeable in the area of sustainability. At least, sustainability as it affects the planet.

Engineers for a Sustainable World (ESW) was officially started at Cornell in 2002. Today it has grown from a small Cornell University club to a national organization of more than 4,000 members with one common vision: to mobilize students and professionals through education, technical projects and collaborative action in order to create a world in which engineering fosters environmental, social, and economic sustainability, which will improve both the quality of life and the condition of the planet.

Yet even after all of the organization's national success, the Cornell Chapter of ESW remains one of Cornell's best kept secrets. It provides an outlet for students who are looking for a way to get more hands on engineering experience from projects such as the Solar Ovens Team and Human Powered Electricity Generator Teams. Have you seen that bright yellow van behind Thurston? That's the ESW "Veggie Van" that the group converted from running off of diesel fuel to run off of clean waste vegetable oil. And for people who just want to de-stress a little bit and volunteer some of their time, there are outreach events where members go out into the community and help garden or build houses. From mini project workshops where members can make their own solar cell phone chargers, to guest lectures from distinguished Cornell professors and corporate leaders, to service trips to Nicaragua, this nationally recognized Gold Standing Chapter of ESW has a little bit of everything to offer students.