

**SPECIAL
POINTS OF
INTEREST:**

- 2013 Induction Nominees
- Engineering Education Must Change. Why?
- Nutter Named ASHRAE Fellow
- Financial & Fundraising Update
- Department of Mechanical Engineering Update

**FROM THE
EDITOR:**

We would appreciate your input and contribution to this publication to make it more interesting for all, so please submit articles/topics for inclusion. Authors of articles will be given proper accolades.

We also would love to publicize what our members are doing for the profession. Please e-mail these to rrasnic@ryan-engineering.com.

The newsletter is published quarterly.

- Russ Rasnic

AAME Headlines

Promoting & Supporting the Mechanical Engineer

NOVEMBER 2012

President's Corner

Fellow **AAME** Members –

I trust you all had a great summer and got to take some time off to enjoy your families. The Board members attended another successful meeting at the U of A Fayetteville campus in October. The Membership committee has done a fantastic job coming up with a list of **outstanding candidates for induction**. You will be seeing voting ballots in the mail and via email in December. I ask that you please get your ballot returned by **November 30** on the package so we can get a good count.

Moving forward, I cannot over emphasize how excited the Board members and I are about **Dr. Jim Leylek's** handling of the Mechanical Engineering Department. He has taken the department in a new direction in engineering education that is turning heads at the College of Engineering and across the country. I believe that his implementation of the Conceive, Design, Implement, Operate (CDIO) program at the University of Arkansas will set the ME Department and College of Engineering on a path of unprecedented

recognition in the development of engineering graduates. Already, companies are contacting the department to learn more and find out how they can help and contribute to CDIO's success. They understand what it will mean for them to have access to future engineers trained in this manner and how quickly those new engineers will be able to contribute to their company goals. What does CDIO mean to you? CDIO represents a chance for you to participate in the enhancement of the stature of the U of A Mechanical Engineering Department. You can improve your own engineering practices, becoming a stakeholder in CDIO development at the university and ambassador for the ME Department.

Engineering education institutions across the country and many companies are starting to take notice of the ideas behind CDIO. With **Dr. Leylek** at the helm, and **AAME's** support, I expect to see the ME department be the first to implement CDIO and lead the way across the Southwest. You can learn more by contacting **Mac Hogan, Bob Harrison**, me or the ME



Department to learn more.

Finally, I call upon all members to become active in **AAME**. Our success and the University of Arkansas Mechanical Engineering Department's success depend on you.

Zane Boatright
AAME President 2012-2013

Note on Nominations

As noted earlier, the membership did an outstanding job on nominating new potential members.

We have **7 candidates**, and their information and ballots are included in this packet.

We have also identified 2 nominees for the College of Engineering **Outstanding Alumni** award, and 1 nominee for **Outstanding Young Alum**.

Send in your ballots by November 30!

Engineering Education Must Change

"Get onboard, this is exciting stuff! It provides the University of Arkansas a golden opportunity to be a pioneer in improving the preparedness of our grads and the perception of the department as a cutting edge organization."

- Russ Rasnic



ME Students' First Conceive, Design, & Build Bridge Project led by Dr. David Jensen & Mr. David Albers

As noted in Zane's column, CDIO is a major focus for the department and AAME. Why the focus? I think the following sums it up well. **Mac Hogan** provided the following information regarding this educational initiative.

Engineering Education Must Change? Why?

In contemporary undergraduate engineering education there is seemingly irreconcilable tension between two growing needs. On one hand, there is an ever increasing body of technical knowledge. On the other hand, there is growing recognition that young engineers must possess a wide array of skills, other than this technical knowledge, that will allow them to function in the real world of engineering teams, and to produce real products.

Engineering education and real world demands on engineers have, in recent years, drifted apart. This widening gap must be closed.

With the advent of the modern engineering science based approach to engineering education in the 1950s, the education of engineers began to become disassociated from the practice of engineering.

Fewer faculty members had worked as engineers (the norm of

the earlier era), and engineering science became the dominant culture of engineering schools. By the 1980s, some began to react to this widening gulf between engineering education and practice. For example, an essay by Bernard Gordon (inventor of the analog to digital converter and winner of the

Medal of Technology) entitled "What is an Engineer?", (Gordon, 1984), clearly enumerates the skills required for contemporary practice. By the late 1980s, a few universities had begun to examine this issue and make tentative statements of the appropriate goals of undergraduate engineering education. By the mid-1990s, industry in the United States began a concerted effort to close the gap between engineering education and practice. Companies, such as Boeing, published lists of desired attributes, and leaders of industry wrote essays urging a new look at the issues. American industry successfully lobbied the National Science Foundation to fund reform of education, lobbied the professional societies to change accreditation standards, and created joint working groups to facilitate exchange of views. ABET, in its EC 2000, created a list of high level goals traceable back to the writings of the past 50 years.

These various statements of high level goals, written in part by those outside the academic community, have not made the kind of fundamental impact that was desired by their authors.

As noted by our own **Bob Harrison**, one of the basic tenets of CDIO is to focus on "shovel-ready" engineers who can produce for their employers from virtually day one. Finding that sort of new engineering talent has long been the goal of industry, but has been mostly unreached.

Several, if not all of us, have experienced being hired as an

engineer fresh out of school and having no idea how to transition from student to being a productive team member. Many companies, including my first employer, Texas Instruments, put engineers through extensive, hands on training regarding the departments and processes that would be used to produce the products we designed, in an effort to better give us exposure to the real world of manufacturing. I did the same thing with engineers I hired (and not just newbies, but also those with experience, to help them become aware of the specifics and capabilities of our facilities). In fact, I took it a step further and made each engineer go out in the plant and physically build the prototype of their new designs, from fabricating the parts to final assembly. This did wonders for their understanding of the impact of their decisions had on the production side, and rapidly improved their manufacturing and "design for manufacturability" savvy.

It is unfair to expect employers to give engineering grads this type of training when they get out of school. This is precisely where CDIO comes in: providing engineers who can hit the ground running and make meaningful contributions for their employers almost immediately. This dramatically shortens the learning curve and provides real returns on investment in technical personnel in a much shorter window for companies.

- Mac Hogan

ME Department Update

As noted, funds supplied by AAME are being consumed in an ongoing basis in support of the CDIO initiative. Meetings are being conducted with Dassault/Falcon Jet regarding additional work in this arena, and the board was honored to have seen a presentation on their needs and vision for engineering grads at the summer meeting. Dassault is quite interested in this revolution in engineering education and are very supportive of ME's

initiatives. Additional companies have been identified who might have an interest.

Current ME undergraduate enrollment increased from 378 to 489 for the fall 2012 semester and minority student enrollment is up to 16.5%, an increase of 2.9% from the previous academic year. This marks the 2nd year that almost 1/4 of all engineering freshman declared ME as their major. To keep up with

program demands, the department has added an additional full-time staff position and are on the market for two additional tenure-track faculty members that would start in the fall of 2013.



Senior Abdoul Maiga participates in the Design, Build, Fly competition

Financial News & Fundraising Efforts

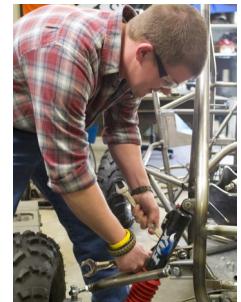
Financials as of September 30, 2012 showed a cash balance of \$48,377.50. Income was \$26,142.86, of which \$14,570 was from member contributions and \$6,225 was from matching gifts. The balance was interest. Expenses for the period were \$22,166.49. The bulk of this came from the costs of the Annual Meeting (\$7477.97) and Special Projects funding (\$8,500). Much of the special projects expenditures for the period were in support of CDIO classroom remodeling

and supplies. The Academy gave \$3,000 to the Solar Splash Competition and another \$3,000 to assist funding of other student competitions. The AAME Endowment Fund total additional is \$181,847.86.

Remember that the Academy, through the University of Arkansas Foundation, has several ways that you can provide support other than cash, many of which are tax deductible or tax deferred. If you would like more information on these donation

avenues, please contact Kellie Knight, Director of Development of the U of A Foundation, knight@uark.edu.

Kellie is currently working to raise \$80 to \$100 million in aid for students and professors, college wide. Strategic Giving Plans plan a Transformational Gift effort to raise approximately \$60 million for a new ME building. When this campaign starts, the University will seek outside donations for about half the cost of this effort.



Building A Mini-Baja

ME Faculty Award



Dr. Darin Nutter,
Professor of
Mechanical
Engineering, has
been named a
fellow by the
American Society
of Heating,
Refrigerating, and
Air Conditioning.

Nutter's contributions to this field include

research for the industry, teaching, and providing support for students interested in this career field. Nutter conducts experimental and numerical research to investigate the fundamental heat transfer and thermodynamics in buildings and in heating, ventilating and air conditioning systems.

Congratulations, Dr. Nutter!

Upcoming Events:

Board Meeting:
January 18, 2012
Fort Smith, Arkansas

Annual Banquet & Business Meeting:
April 12 & 13, 2013
University of Arkansas
Alumni House



Arkansas Academy of Mechanical Engineers

204 Mechanical Engineering Building

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Promoting & Supporting the Mechanical Engineer

Mission of the Arkansas Academy of Mechanical Engineers

To promote and support the mechanical engineering profession, to honor the Mechanical Engineer and to work with the University of Arkansas Department of Mechanical Engineering to increase the appeal of Mechanical Engineering and further the educational development of future engineers.

2012-2013 Board & Committee Chairs:

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CDIO Recon

Mac Hogan, Dr. Jim Leylek and Dr. Rick Couvillion visited Purdue University to review their progress with CDIO. Dr. Couvillion noted that they have dramatically enhanced their freshman programs through the addition of hands-on projects, and have introduced open ended design problems early on and all throughout the undergrad curricula. Upper classmen are doing design and

build projects through completion, and there is dedicated space set aside for mini-brainstorming conferences in the lab areas. As a side note, Rick mentioned Mac's prowess as a pilot during the trip, and noted that his landings were outstanding!

Not sure if this was Mac's bird, but extra credit if you can identify what type of plane this is (with apologies to Prez Boatright for the use of that "other" branch of the service)! Double extra credit if you can tell me where the picture was taken.

Currently, 3 faculty members within the U of A mechanical engineering department have implemented CDIO; Drs. Jensen & Roe and Mr. Albers, with progress continuing on facilities daily. Additionally, Mac has also taken the lead in supplying a project for engineering services from his own company, PoloplaZ for use in support of the CDIO effort.



Can You Name This Plane?

Spread the Word

The board is energized about the happenings within the ME Department, as well as with the defined mission for the future role of the Academy in supporting the Mechanical Engineering mission.

Please feel free to forward the newsletter to your colleagues and

others that you feel may have an interest in hearing about and participating as we move forward.

Since electronic mail is effectively free, we would appreciate you providing us with e-mail addresses of those individuals and organizations that you feel may like to be informed of our progress. Please

email names and information to Melynda at melhart@uark.edu.

Don't forget to check out the AAME website regularly for all the latest news and happenings on the hill!

www.meeq.uark.edu/aame