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Western Michigan University

May 2016

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Tau Beta Pi The Engineering Honor Society

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Matthew Baird receives NASA Space Technology Research Fellowship

Matthew Baird, a Western Michigan University senior in mechanical and aerospace engineering, has received a prestigious NASA Space Technology Research Fellowship.

Baird, who is from Alpena, Mich., will intern for The Air Force Research Laboratory Space Propulsion Directorate this summer at Edwards Air Force Base. He will be working on his Ph.D. at WMU starting in the fall. In addition to the research he will do at Western, his work will require that he conduct research at NASA Glenn Research Center in Cleveland, Ohio.

Prior to attending WMU, Baird attended the U.S. Navy's nuclear propulsion school and was stationed on the USS Oklahoma City nuclear submarine for four years, where he maintained reactor plant chemistry, tracked crew radiation exposure and prevented the spread of radioactivity during maintenance.

His current research is titled "Understanding newly discovered oscillation modes in magnetically shielded Hall thrusters utilizing state of the art high speed diagnostics." Said Baird, "It's a mouthful, but it loosely translates to obtaining a better understanding of a type of electric propulsion – called Hall effect thrusters – for spacecraft."

Dr. Kristina Lemmer, Baird's faculty advisor, said, "Matt is one of the hardest working, most intelligent undergraduate students I have ever had the pleasure of working with. He takes more initiative than most graduate students."

NASA sponsors graduate student researchers who "show significant potential to contribute to NASA's goal of creating new and innovative space technologies for the nation's science, exploration and economic future."

Selected candidates perform research at their respective universities and at selected NASA centers. In addition to a faculty advisor, each student is matched with a NASA researcher who serves as the student's research collaborator. According to NASA, "Through this collaboration, students will take advantage of broader and deeper space technology research opportunities directly related to their research objectives, acquire a more detailed understanding of the potential end applications of their efforts, directly disseminate their research results within the NASA community and enhance their understanding of the research process."

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Six volunteers from Western’s chapter of the Society of Women Engineers spent several hours demonstrating engineering concepts and engaging the girls in hands-on activities.

“We are grateful for this opportunity to reach out to children in our community,” said Chelsea Russell, a senior in electrical engineering who helped coordinate the event. “We are looking forward to doing it again in the fall.”

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The installation of nearly 4,000 solar panels is expected to be done by the end of summer. “We will likely be producing power by mid-August,” said John Seelman, WMU’s director of engineering.

The electricity produced will be distributed to the “grid” and made available to Consumers Energy customers who want to purchase it.

He said the solar project ties in well with WMU’s desire to be more sustainable. “In addition, we are working to minimize impacts to the existing prairie grass and wildlife found on campus,” he said. “Another priority is to continue to be a good neighbor to those in the BTR Park and the adjoining neighborhood.”

The solar array is one of the first large-scale solar projects Consumers Energy is building throughout Michigan. Under state law, Michigan utilities must obtain 10 percent of their energy from renewable sources.

Alex Ferguson awarded prestigious fellowship from Department of Defense

Electrical engineering senior Alexandra Ferguson, of Livonia, Mich., is one of 180 students nationwide who recently was selected to receive the prestigious 2016 National Defense Science and Engineering Graduate Fellowship. More than 3,000 students applied for the highly competitive fellowship, which is funded by the Department of Defense. This award supports U.S. citizens and nationals who plan to pursue a doctoral degree in one of 15 disciplines at the U.S. institution of their choice. Recipients are those who have "demonstrated the ability and special aptitude for advanced training in science and engineering." The fellowship is awarded for three years and pays for full tuition as well as a monthly stipend.

Ferguson plans to stay at WMU to complete a master's degree in electrical engineering in spring 2017. She will then search for engineering doctoral programs focusing on neuroscience or neurobiology. "I am honored to accept this prestigious fellowship," Ferguson said. "I want my research to make a difference in the world."

She currently works in the WMU Neurobiology Engineering Laboratory directed by Dr. Damon Miller, associate professor of electrical and computer engineering. They are collaborating with faculty in the university's mathematics and biological sciences departments to find smaller electrical stimulation currents that yield the same neuron responses as higher currents in leech neurons. The research could have potential in improving ways to treat neurological diseases.

Miller applauded Ferguson's work as an undergraduate and her selection for the fellowship. "Alex is a most deserving student for this award," he said. "She sets high goals for herself and then puts in the long hours to achieve those goals. She does not just excel in the classroom and lab -- she is also active on campus, including being a member of the Bronco Marching Band."

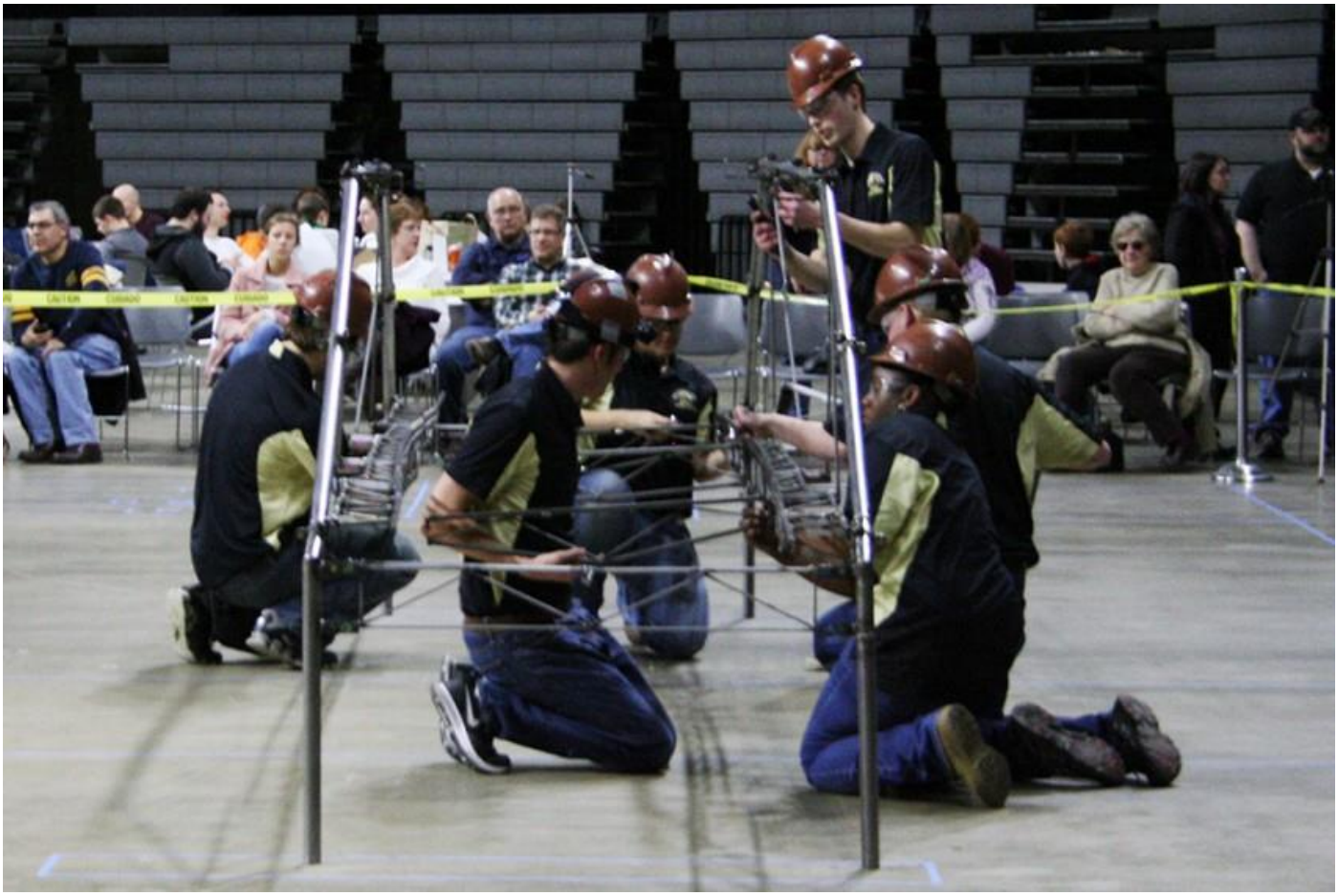
Miller also noted that "Alex has particularly impressed me with her ability to quickly learn new material and skills outside of engineering. For example, she completed a rotation in Dr. John Jellies' Laboratory on leech electrophysiology in preparation for her thesis work."

The Department of Defense fellowship program seeks to increase "the number and quality of our nation's scientists and engineers." Approximately 3,200 fellowships have been awarded over the last 22 years. Further information can be found at ndseg.asee.org.

Top engineering students honored

Seventeen WMU students in April were initiated into Tau Beta Pi, the national engineering honor society. Tau Beta Pi recognizes undergraduate engineering students that display "distinguished scholarship and exemplary character." WMU's Michigan Kappa Chapter has consistently been recognized at the national level for its service activities. Eligible students must be elected by the chapter to membership after being invited to apply based on their class rank -- the top eighth of juniors and top fifth of seniors. WMU Provost Timothy Greene and Dean Houssam Toutanji congratulated the students at a banquet immediately following the initiation ceremony.

Teams participate in steel bridge, concrete canoe competitions



A day at the races it was not. Mother Nature prevailed with a frigid, icy Saturday in April and concrete canoe races at the ASCE North Central Region's concrete canoe competition at Michigan State University were called off. Despite not being able to put their boat in the water this year, the WMU 2016 Concrete Canoe Team placed 4th overall out of eight teams, including 2nd place in their presentation to a panel of judges and 3rd place on the technical paper.

Concrete canoe team captain Bryan McDowell said, "Overall we made some big strides this year with a very young team. When you have members from other teams talking about your canoe and its innovations, you know you're doing something right. This team has nothing but potential."

Western Michigan University's steel bridge team also competed in the event and tied for third place. Their 1:10 scale model bridge earned high marks for its low weight and sleek design, but was not able to support the required 2,500 pounds due to a violation of maximum sway.

"We learned a lot, had a great experience and really came together as a team," said Tom Palumbo, steel bridge team captain. "We also had quite a few freshmen and sophomores on the team and their experience gives us a lot of momentum going forward."

Civil engineers now have Chi Epsilon chapter at WMU

WMU's Civil and Construction Engineering Honor Society was officially initiated as the 138th chapter of Chi Epsilon, the National Honor Society for Civil Engineering in the United States, when 15 members were inducted into the newly approved chapter Sunday, April 24.

Chi Epsilon was founded in 1922 to recognize and honor civil engineering students and professionals, and now has 138 chapters at universities across the country. It is widely recognized in the profession and has initiated nearly 119,000 members.

According to Dr. Decker Hains, chapter advisor, "Establishing a Chi Epsilon Chapter at WMU is a prestigious honor and is indicative of the high caliber of our students as well as their dedication and service to the profession. This distinguishes WMU's Department of Civil and Construction Engineering as one of the top programs in the country."

Students and professionals are selected to become members based on recognition of their scholarship, character, practicality and sociability -- considered by Chi Epsilon to be the four primary traits of a successful engineer.

For student members, scholarship is determined by being in the top third of their junior or senior class. Members of Chi Epsilon are considered top graduates and are highly sought by civil engineering employers.

Alumni Spotlight

Our May feature is Yasir Khogali, a 2000 graduate in mechanical engineering. Khogali is an engineering manager at Nissan Technical Center in Farmington Hills, Mich., and serves on the board of the WMU Alumni Association. He received the Alumni Excellence Award for the Department of Mechanical and Aerospace Engineering in 2015.

What's your career path been like since graduating from WMU's College of Engineering and Applied Sciences? Have there been any surprises along the way?

I started off as a design engineer for a Tier 1 automotive supplier using my skills as a mechanical engineer from day one. After 12 years with that company, an opportunity opened up with an OEM where they would teach me a brand new skill that would make me a more well-rounded engineer. I spent the next two years working more in the electrical world of engineering, which any self-respecting mechanical engineer will tell you is sacrilege, but people were willing to teach me a new skill so I jumped at the chance. Having both the mechanical and the electrical experience allowed me to transition into the management role that I currently hold.

What are you passionate about in your work?

Making myself better each day. As cliché as it sounds, what drives me is the pursuit of the next puzzle that is tougher than the last. I like the projects that others don't want because they are challenging. Fearing failure or fear of taking on new challenges is the worst reason to say no to an opportunity. You never know your capacity to do something until you push your own boundaries.

How did your experience at WMU's College of Engineering and Applied Sciences shape your success?

I had some phenomenal professors -- professors like Dr. Koorosh Naghshineh -- who continue to be mentors to me today. Men and women that challenged me to do better, pushing for excellence. Those professors were there for me when I stumbled, picked me up, dusted me off then kicked me in the pants to get back to working toward my dream of being an engineer.

It sounds like you keep in touch with many other alumni. How do you stay connected to them?

Social media is the easiest way of course, but there are a core group of friends that were with me when we graduated from WMU, friendships forged through late nights working on projects and labs. Those people continue to be a very important part of my life. I also serve on the WMU Alumni Board of Directors, which has allowed me to interact with fellow Broncos all over the country, as well as serve as an ambassador for the university, and specifically for the College of Engineering and Applied Sciences.

Anything else we should know?

I transferred to WMU from a community college. I participated in a summer program at a university outside of Michigan and was supposed to attend that school in the fall. It turned out to not be a good fit for me but when I returned to Michigan, it was past time to apply to four-year universities. Ultimately, I came to WMU, which provided me the sense of belonging that I was missing from my experience at the community college. It's important to keep in mind that people arrive at WMU having taken different paths and with different life experiences. The university experience is about education, of course, but it is also about community.