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Ogden College of Science & Engineering Newsletter (Spring 2015)

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Ogden College of Science & Engineering

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Annual Career Fair Offers Opportunities for Ogden Students

The Center for Career and Professional Development partnered with Ogden College to bring the 2015 Career Fair to the Ogden campus on Wednesday, February 25th.

The event gave Ogden students the opportunity to connect with employers looking for future employees with knowledge in the science, technology, engineering and math disciplines. Dozens of state, regional, and national companies attended the event which was held in three different buildings on the Ogden campus. Representatives from firms such as Sumitomo, Logan Aluminum, Alltech, Kirby Building Systems, the U.S.D.A. and more were on hand to answer questions.

Students were encouraged to bring their resumes and dress professionally. Recruiters were looking to fill full-time, part-time, and co-op positions as well as internships.

Congratulations to the Ogden College Faculty Award Winners

Teaching—Andy Mienaltowski, Psychological Sciences
Research/Creativity—Scott Grubbs, Biology
Service—Mike Stokes, Biology
Advising—Raja Dakshinamurthy, Chemistry
Jeremy Sublett co-founded the company Composable Systems in 2007 with the purpose of using the best technology available to assist customers in reaching their goals. Composable Systems focuses on custom software development for mobile applications, business process systems and business intelligence systems.

As Managing Partner, Jeremy handles all business relationships for his company, including its relationship with Microsoft.

Jeremy has extensive experience in software development, software architecture and technical leadership. He is a former Microsoft SharePoint Server MVP, a designation awarded to only several hundred people world-wide.

In his downtime, Jeremy is a private pilot and avidly shares his passion for flight with his two sons. He also enjoys mountain biking along the park trails in Louisville and is working hard to become fluent in German.

Jeremy graduated from WKU in 1994 with a major in Computer Science and a minor in Business Administration. He is a member of Sigma Alpha Epsilon fraternity. He currently serves on the Ogden College of Science & Engineering Advisory Council.

Dr. Ferhan Atici, Department of Mathematics, is hosting Ph.D. student Ms. Hatice Yaldiz (pictured at left) from Duzce University, Turkey, during the 2015 spring and summer semesters.

Hatice received a scholarship from one of the top scholarship programs in Turkey, TUBITAK, to come to WKU. The scholarship is for five months and extendable to twelve months. Hatice will be working on her Ph.D. thesis under the supervision of Dr. Atici. Her work is in the area of Discrete Fractional Calculus with a focus on integral inequalities. The Math Department is excited to host Hatice.
Ogden Student Ambassadors Tyler Smith (above left) and Victoria Hampton (below left) got a sample recently of just how curious and inquisitive some area elementary students can be.

A few weeks ago the Ambassadors visited Mrs. Laura Briggs’ third grade class at Bristow Elementary School located at the north end of Warren County. Tyler and Victoria, both of whom are meteorology majors, were asked by Mrs. Briggs to present to the class material covering severe weather topics such as floods, hurricanes, tornadoes and blizzards. Potential hazards and information about each weather topic were shared with the students. Tyler and Victoria were joined on this educational endeavor by freshman meteorology student Pierce Larkin (at left).

Twenty-three students competed for the title of 2015 Coming Home King. Ogden College sponsored Ambassador Ryan White (at right), a Mechanical Engineering major from Liberty.

Ambassador and Biology major Ellen Vice (left) and her friend from the Biology 321 Comparative Anatomy class.
Over the last 16 years, there have been 96 students who have represented WKU Agronomy in the Southern Regional and the North American Colleges & Teachers of Agriculture (NACTA) Association Soil Judging Contest. This type of contest gives our students a chance to see and practice judging soils from different regions in the United States.

Students have been in contests from as far west as California, as far east as Virginia, as far north as Nebraska, and as far south as South Carolina. This past fall students attended the Southern Regional Contest which was held by Clemson University.

These opportunities give Agronomy Students chances to learn about the different soil types seen in each region since many of them will have careers with the federal department of USDA-NRCS, state agencies like Kentucky Conservation District, the Public Health Department and as Soil Science Consultants.

The team is currently preparing for the NACTA Contest held in Moline, Illinois in April. Members of the 2014-2015 WKU Soil Judging Team are Justin Bary, Zack Choate, Seth Haddock, Will Kemper, Connor Popeck, John Scarpa, Austin Smotherman, and Hosea Wells.

The mural pictured below was painted by Barbara DeGraves. The scene is located on a wall in the student lounge of the Ag Department in the Environmental Science and Technology building.

Help From Hemp

The most recent farm bill allowed states with laws in place to conduct research with industrial hemp. Though industrial hemp is different from marijuana, it is still a federal illegal crop and illegal in most states including Kentucky. Because of laws already in place, Kentucky was in the position to be a leader in industrial hemp research.

WKU Agriculture was chosen to be a participant by the Kentucky Department of Agriculture in last year’s pilot program. Thirteen industrial hemp cultivars from Europe were evaluated for fiber and seed production at the University Farm. WKU Agriculture has been approved again this year by the KDA and will be increasing its research efforts in this field.

Industrial hemp has many uses including: health foods, cosmetics, textiles, manufacturing components, and medicine. Cannabidiol (CBD) is a medicinal compound found in industrial hemp that is used to treat individuals suffering from epileptic seizures. Unlike the THC found in marijuana, CBD does not provide a ‘high’ for humans. CBD has also shown promise to fight certain cancers and be an effective anti-inflammatory.

It is the hope of the KDA that industrial hemp could fill part of the void left by KY’s declining tobacco industry. WKU Agriculture’s research will focus on determining best management practices for pest control and soil fertility in regards to producing the crop. In addition, cultivars will be evaluated for seed, fiber, and CBD production.
WKU’s Habitat for Humanity campus chapter sent two volunteer groups to North Carolina and Arkansas during Spring Break.

Dr. Bryan Reaka, faculty member of the Architectural and Manufacturing Sciences Department, accompanied the group volunteering in Arkansas. The groups consisted of students majoring in construction management, advanced manufacturing, and architectural science as well as several other non-AMS majors such as computer science and elementary education.

The students assisted local Habitat For Humanity affiliates with projects as part of Habitat’s Collegiate Challenge Program. Collegiate Challenge offers students an opportunity to volunteer with Habitat affiliates from across the country during breaks during the academic year.

The program works to build houses and hope in communities. Students learn a great deal about building, issues of substandard housing, working and living within a community, cultural differences in various parts of the country and, most of all, themselves.

News and Notes

Dr. Khouryieh has received a research grant of $7,500 from the NSF Kentucky EPSCoR to research methods to increase the oxidative stability of fish oil. His project is titled “Increasing the Oxidative Stability of Omega-3 Fatty Acids Utilizing Emulsion-Based Delivery Systems.”

Several students working under the leadership of Ms. Shahnaz Aly are making strides with their research. Hamilton Brindley, Andrea Dunnaway, and Kentra Whitaker (pictured at right) presented their research at the 9th Annual Design Principles and Practices Conference in Chicago held between March 12-14th. Hamilton Brindley, Jennifer Gaiko and Kentra Whitaker have been accepted to present a joint poster at the Posters At The Capitol event. The poster is titled “Architecture and Its Societal Significance.”

Dr. Mark Doggett presented his research on the Technology Management Competency Model to the Association of Technology, Management, and Applied Engineering’s Management Division on February 27th. The presentation was delivered via webinar to a national audience. To view a recorded version of the webinar visit https://connect.wku.edu/p1n72t02y61/.

Chi Omega House received the City of Bowling Green’s Operation Pride Award. The house on Chestnut Street was renovated from a historic property to a WKU sorority house. Students Heli Shah, Damario Walker-Brown, and Zach Houck worked on the project with Professor Neal Downing.
WKU Biology graduate students judged the Science Fair for 4th and 5th graders at Potter Gray Elementary School on Thursday, February 26th. Biology student guest judges were: Mayank Kapadia, Chase LaDue, Amy Fehrenbach, Andrea Sejdic, and Jennifer Dumaine.

Dr. Rodney King and Dr. Claire Rinehart recently received a $10,000 award from the Howard Hughes Medical Institute to support WKU students engaged in genomics research. Students in the Department of Biology’s Genome Discovery and Exploration class isolate and characterize unique viruses from the environment and annotate the DNA sequence of their genomes. This program is designed to engage new undergraduates in the process of doing scientific research.

The Kentucky Academy of Science is proud to announce that Dr. Nancy Rice was awarded a research grant for her work titled “Epigenetic regulation of renin-angiotensin system (RAS) genes linked to hypertension.” This project focuses on managing high blood pressure for residents in rural Kenya. Congratulations, Dr. Rice!

Kenya Wildlife Service veterinarians and rangers captured a crop-raiding elephant to attach a new tracking collar designed by faculty from the WKU Biology and Engineering Departments. The collar is designed to alert local subsistence farmers to a crop raid by the young bull elephant. WKU alumnus Simon Kasaine (right, in the hat and gray shirt) is coordinating the project in Kenya.
Bridging the Gap

Ogden College is proud to announce an exciting new opportunity for the building of productive relationships with potential students from, and the faculty of, local community colleges. The Big Red Bridges program is an initiative spearheaded by Drs. Rajalingam Dakshinamurthy, and Cathleen Webb of the Department of Chemistry, and Dr. Matthew Shake of the Department of Psychological Sciences. It has been formulated into a grant proposal which has been submitted to the NIH and is currently being considered for approval.

The Big Red Bridges program is intended to provide opportunities for area community college students in biomedical and behavioral sciences to make a seamless transfer into the baccalaureate program at WKU. These students have a unique chance to interface with WKU faculty and participate in undergraduate research, especially over the summer. The program is open to students from any KCTCS regional campus, but structured in such a way that there is a closer partnership with four specific community colleges: Elizabethtown Community and Technical College (ECTC), Owensboro Community and Technical College (OCTC), Somerset Community College (SCC) and Southcentral Kentucky Community and Technical College (SKYCTC). These programs were chosen based on the number of students who already transfer into Ogden College of Science, and their proximity to Bowling Green.

Last summer Drs. Dakshinamurthy and Webb, on behalf of Ogden College, invited the entire KCTCS science faculty from all of the various regional campuses to have lunch on WKU’s campus. They presented the Big Red Bridges program to the participating faculty, and began the process of building the types of relationships which can increase the number, quality, and support for students transferring from KCTCS campuses to WKU. Dr. Dakshinamurthy has also travelled to Versailles and had a well-received presentation introducing the Big Red Bridges program to their faculty last spring. These efforts have already produced new research collaborations between WKU and KCTCS faculty, a trend that will only expand as the relationships fostered by the Big Red Bridges program are strengthened.

The WKU Student Chapter of the American Chemical Society (also known as The Chem Club) sets lofty goals for its members. These goals are to become better acquainted with each other, secure intellectual stimulation that arises from professional association, foster a professional spirit, instill a professional pride in the chemical sciences and foster an awareness of the responsibilities and challenges of a modern chemist.

Some of these goals were accomplished while the students attended the meeting of the American Chemical Society in Denver, CO the week of March 23rd. Most of the students gave research presentations. Additionally the WKU Chem Club was awarded Honorable Mention while attending the meeting. Students traveling to Denver included Dharmesh Patel, John Ferguson, Ka Wai Kwong, Tse-Hong Chen, Wie Long Luo, Danielle Chavis, and Gatton Academy students Anna Braun and Kelly McKenna.
Every student should have the opportunity to learn computer science. It nurtures problem-solving skills, logic and creativity. The Hour of Code is a one hour introduction to Computer Science designed to show that anybody can learn the basics.

One WKU student provided an Hour of Code activity for gifted 5th and 6th grade students at the Warren County 212 Academy. Colton Ramos showed these high achievers at the 212 academy just how fun Computer Science can be. Colton is a member of the WKU chapter of the Association for Computing Machinery, the world’s largest educational and scientific computing society.

Hour of Code is organized by Code.org, a non-profit dedicated to expanding participation in computer science by making it available in more schools. Anybody can host an Hour of Code event at any time. See www.hourofcode.com for more details on how to get started.

Students Connor Brooks and Christophe Goulet, led by Dr. Michael Galloway, have completed the initial stages for developing an indoor, fully autonomous multi-rotor vehicle. The focus of this project is to create inexpensive drones to be used for target searching and mapping of indoor environments, including traversing stairwells.

This project provides research experiences in software design and development, as well as introducing the students to applied mathematics, physics, architectural design, and electrical engineering. The students will present their work at this year’s WKU Reach Week as well as conferences sponsored by IEEE and ACM.
Some of the nation’s top floodplain managers met at WKU, home of the United States’ first four-year degree in floodplain management.

Members of the Certification Board of Regents for the Association of State Floodplain Managers were in Bowling Green March 2-4 for their spring meeting.

“It’s a really big deal to have them in Bowling Green,” said Warren Campbell, WKU Hall Professor of Civil Engineering and co-chair of the ASFPM’s Higher Education Policy Committee.

Since creation of the nation’s first minor in floodplain management in 2007, WKU has had 48 graduates earn their national certification as floodplain managers - that’s more than 11 states.

WKU’s Bachelor’s of Interdisciplinary Studies with a Concentration in Floodplain Management is part of a nationwide effort by ASFPM to expand educational opportunities in the field and to respond to a national and international need for certified floodplain managers.

“Before 1982, there were no Emergency Management & Planning degree programs in the United States,” Campbell stated. “Today there are more than 200 associate, bachelor’s and graduate degree programs available in EM&P. We hope that floodplain management follows this same pattern and that our program at WKU will provide a template for other universities to follow. With these programs, our profession is coming of age.”

The WKU bachelor’s degree program includes courses in floodplain management, technical courses (engineering, geography, geology, GIS, meteorology, surveying, mathematics), communication and political science.

Added Campbell, “We need more prospective college students to realize that floodplain management is a viable career option. We’ve had really good support from ASFPM. This program goes a long way to making floodplain management a more recognized profession.”

Below: Warren Campbell, WKU Civil Engineering Professor; Ingrid Danler, ASFPM; Mark Riebau, CBOR; Cheryl Stevens, Dean of Ogden College of Science & Engineering.
Bat Population in WKU’s Research Cave Possesses Deadly Disease

While bats aren’t everyone’s favorite creatures, they play an important role in the ecosystem. They eat large numbers of mosquitoes and other pesky bugs.

These flying mammals, however, are currently being threatened by a dangerous disease known as white-nose syndrome.

Within Crumps Cave, 12 tricolored bats out of a population of 53 had observable signs of the disease. The symptoms were discovered on Feb. 10 when Rick Toomey, director of the Mammoth Cave International Center for Science and Learning, and a team of National Park Service scientists visited the cave to observe the bat population.

Symptoms of the syndrome include the appearance of white fungus on the bat’s nose, wings, ears or tail. It is caused by a fungus that grows in cold environments where bats hibernate.

Crumps Cave, located near Smiths Grove, is owned by WKU and used to research and protect the various flora and fauna in that area, as well as the cave itself.

Bats eat a large number of insects every night, keeping populations in check. If the bats started to die out, the number of insects would increase, leading to the use of more pesticides or increased transmissions of diseases.

Christopher Groves, a hydrogeology professor in the department of geography and geology, stressed the seriousness of the situation.

“This is a disease that is ravaging bats. More than five or six million of them have been killed by this disease since it was first discovered in 2006, and so far, there is absolutely nothing to do to stop it,” he said. “They understand what’s doing it now, but there’s no treatment or preventative for it,” he said. “So, it’s very clear that there’s at least a possibility that there’s subspecies of bats, who know how many, who could go extinct in a really short period of time.”

Since there’s no cure, the current approach is to not disturb the bats and let them fight the disease on their own. Secluding the sick bats from the healthy could worsen their condition or spread to unaffected bats.

Toomey suggests that those venturing into caves need to make sure their cave gear is clean and free of contamination as they move from one cave to another to prevent the spread of the fungus. Scientists believe the disease is transferred by the bats themselves, but also by people tracking it through shoes and other gear.

Toomey stated, “The bats that are still surviving need as much good habitat and as much help as possible, so helping to maintain good habitat, bat houses and things like that will help the bats that make it through this.”

Chris Groves, professor of hydrogeology, sits in Crumps Cave, where he and other colleagues are researching hydrology, ecology, archeology, geology and biology. The current focus of their research is white nose syndrome - a disease threatening the lives of federally endangered gray bats.
Students Attend Van Winter Lecture at UK

Dr. Bruce Kessler, Department Head, traveled with two math majors, Kathleen Bell and Aaron Brzowski, to the University of Kentucky to hear a presentation given by Dr. Ingrid Daubechies from Duke University. Dr. Daubechies spoke at the Van Winter Memorial Lecture. Her presentation was titled, “The Master’s Hand: Can Image Analysis Detect the Hand of the Master?”

While visiting UK the group ran into some former WKU students. Alumnus Chase Russell is a graduate math student at UK. Sammy Hawtrey, Gatton Academy alumnus and current UK medical school student was representing in her WKU sweatshirt!

Above: Math majors Kathleen Bell and Aaron Brzowski pose with Dr. Ingrid Daubechies from Duke University at the end of the lecture. 
Below at far left: Former Gatton Academy student Sammy Hawtrey
Below at far right: Students Aaron Brzowski and Kathleen Bell
Below middle: Dr. Ingrid Daubechies during her lecture

The Mathematics Department now has a blog!

Check it out at: http://math.blog.wku.edu/
See us also on Facebook at: www.facebook.com/wkumath
Physics Olympics Draws the Area’s Brightest Students

The WKU Department of Physics & Astronomy is celebrating the International Year of Light and that was the theme for the 2015 Physics Olympics. High schools were invited to send teams of four to compete in the event held February 21st at WKU’s Snell Hall.

The half day competition consisted of a pentathlon of challenging problem-solving activities that rewarded teamwork, communication and creativity.

The event was organized by Dr. Richard Gelderman. “Every one of today’s activities has to do with light,” Gelderman commented.

Students enjoyed the practical application of the tasks in the competition. During one task they worked to determine sugar content in bottles of liquid.

“A technician in a brewery might do this, but not know how it works. A physics student would know how it works, but they might not have done it,” Gelderman added.

“I’m a very hands-on person,” stated Tinsley Howard, a 14 year old from Bowling Green High School. “A lot of the things we did today we’ve learned in class. It just helped me better understand why things functioned the way they did.”

Dr. Michael Carini, acting Department Head of Physics & Astronomy stated, “We are bringing some of the brightest kids in the area onto campus. They get to see the campus and interact with faculty, undergraduate, graduate, and Gatton students. The university gets really good exposure.”

The team from Warren Central High School, dubbed the “General Lee’s,” earned first place. Second place honors went to the “Science Squad” from Bowling Green High School. Each member of the overall top scoring team received a $500 scholarship to WKU while members of the overall second place team received a $200 scholarship.

“I’m a very hands-on person. A lot of the things we did today we’ve learned in class. It just helped me better understand why things functioned the way they did.”

Tinsley Howard, 14, Bowling Green High School

Photo by Miranda Pederson/BG Daily News
Dr. Aaron Wichman just returned from the Society for Social and Personality Psychology in Long Beach, CA.

He attended with two FUSE grant students, Rachel Archer (pictured above), who presented a poster on depression related stress reactivity, and Allen Clark, who presented a poster on how men are more stress-reactive than women.

They asked adults to judge distances between LED points on a three-dimensional display and found that older adults show more accurate judgments in visually perceiving environmental distances between objects than younger adults such as those in their 20’s. So people really do get better at some things with age!

Congratulations to Dr. Andy Mienaltowski for winning the Ogden College Faculty Award for Teaching!