Mr. Ezechiel Degny, a graduate student in applied mathematics, co-authored a paper with his graduate advisor Dr. Clarence Burg titled "Derivative-Based Midpoint Quadrature Rule." The paper appeared in the January 2013 issue of the Journal of Applied Mathematics. The work investigated the use of derivative evaluations of a function to develop numerical methods for approximating the value of a definite integral. Starting with the midpoint method and using derivatives of the function, Degny and Burg were able to develop numerical methods that were more accurate and less computationally expensive than existing methods.

The ACM International Collegiate Programming Contest (ICPC) is a multiter, team-based, programming competition operating under the auspices of the Association for Computing Machinery (ACM). The 2012 Mid-Central Regional contest was held on Saturday, November 3, 2012, at the University of Arkansas at Little Rock. Three students, from UCA’s Computer Science Department, participated in the contest: David Coyne, Alex Loney, and Ben Tackett. A total of 14 teams from eight universities across Arkansas competed in the regional contest. UCA’s team placed sixth and was one problem short from being placed second. Dr. Vamsi Paruchuri is the Coach of the UCA Team.
Dr. Jennifer Wang, an Adjunct Instructor and Research Associate in the Department of Biology, presented a talk at the Western Users of SAS Software (WUSS) conference in Long Beach, California, in September 2012. The talk was entitled "The influence of small sample sizes on empirical Bayes' predictors in longitudinal data sets." Dr. Wang’s paper explores how small sample size affects prediction of individual means and confidence intervals in mixed models. She used a bootstrapping technique on a data set from her research in avian behavior and ecology, a field in which small samples can be common.

Dr. Wang received a Junior Professional Award from WUSS to attend the conference. Her conference proceedings paper can be found at http://www.wuss.org/proceedings12/100.pdf.

Dr. Yu Sun, Associate Professor of Computer Science, received a grant from NASA EPSCoR (Experimental Program to Stimulate Competitive Research). The funded research, entitled “New Computer Vision Methods for NASA Robotic Planetary Exploration,” is a multi-disciplinary collaborative project among UALR, UCA and UA-Fayetteville. The total amount of the award is $750,000 for the duration of 36 months. The goal of NASA EPSCoR is to enable jurisdictions to develop an academic research enterprise directed toward long-term, self-sustaining, nationally-competitive capabilities in aerospace-related research.

In this project, the multi-campus research team of Dr. Ye Cang (PI, UALR), Dr. Yu Sun (UCA, Co-PI) and Dr. Miaoqing Huang (UA, Co-PI) will collaboratively devise innovative computer vision methods based on a new class of 3D imaging and camera sensors to support autonomous robotic operation in NASA’s future missions. The proposed methods are expected to revolutionize robotic autonomy and advance NASA’s robotic technology. In addition to the great economic benefit to the state of Arkansas, this project will also have significant educational impact in providing highly trained undergraduates and graduates in the state to support the growth of the knowledge-based industry.
Artists and Scientists working together? Of course! In Fall 2012 the central Arkansas based Curious Connections group hosted a science café entitled “The Chemistry behind the Art of Ceramics.” The public was invited to an open discussion of the mingling of art, science, and color. Liz Smith, a UCA professor of art, discussed her experience with ceramics and glazes. Her original ceramics work is equal parts careful experimentation and serendipity, an exploration of novel colors and textures of ceramic objects. Patrick Desrochers, a Chemistry Professor at UCA, offered a window into the chemistry. From his experience in metal chemistry, he contrasted ceramic development over thousands of years with some of the newest uses. The event was hosted on the campus of the University of Central Arkansas by the Honors College, which provided an informal seating area to bring the audience, panelists, and demonstrations together. There was a lively discussion between audience and panelists on many topics including: the history of ceramics, the chemistry of the glazes, and the properties of the kilns.

Curious Connections is a different kind of Science Café that brings together an interdisciplinary panel to converse with the public about a wide range of topics. We are in the process of planning our spring event. Potential topics for upcoming Curious Connections events include: Paleolithic Art and the Chemistry of radiocarbon dating, Science and Policy, Cognitive Psychology and Magic, and Music and Biology! If you have any suggestions or would like to receive email updates for future events please email us at curiousconnectionsconway@gmail.com.

Liz Smith (picture on the right) chats with Patrick Desrochers prior to the start of the “The Chemistry behind the Art of Ceramics” discussion. Hearing these two go back and forth with child like curiosity of each other’s expertise was fascinating! On the table you can see examples of ceramics, clay, as well as pre- and post-fired glazes.

A student participant at the “The Chemistry behind the Art of Ceramics” Curious Connections event examines seemingly boring grey colored ceramic glaze and a post-fired test piece with the same glaze.
Mathematics Department Leads Statewide Adoption of Quantitative Literacy as a Course For General Education

The UCA Department of Mathematics has taken the lead in design and implementation of a Quantitative Literacy course, which is intended to meet general education requirements for students who have majors other than STEM related disciplines. Under a federally funded grant to the Arkansas Department of Higher Education (Complete College America – CCA), instructors from six departments of mathematics in the state (ASU, ATU, UALR, UAPB, UCA, & U of A) came together to design a course in lieu of College Algebra that would meet the general education requirements. Dr. Charles Watson, Associate Professor in mathematics from UCA, was chosen to lead the development work and to collaborate with the Department of Higher Education and the Arkansas Higher Education Coordinating Board. A course outline and draft syllabus for Quantitative Literacy was completed in the spring 2012. The course was piloted at UCA and four other colleges in fall 2012.

At the April 2012 meeting of the Arkansas Higher Education Coordinating Board, Dr. Watson was invited to present the course description and summarize the work of the CCA institution representatives toward implementation of the course. The board adopted a resolution that approved the Quantitative Literacy course in meeting general education requirements as a pilot project and invited its fuller implementation across the state as a course that eventually will meet full course transfer authority.

“I want to thank you for a great semester in your class. I never believed that was possible in a math class for me. I learned more in your class than I ever have in years of math classes. I will continue to use the skills you taught me in class for a lifetime.” This comment from a student reflects the tenor of many comments received following the pilot implementation of the course.

On January 8, 2013, the Department of Higher Education and the CCA grant sponsored a day-long workshop at UCA for advisors and new instructors from colleges and universities outside the implementation institutions. Fifty-three faculty and student advisors attended. Dr. Watson led the session and professional development for instructors was provided by Dr. Dave Sobecki, Miami (Ohio) University. The session was attended by Mr. Shane Broadway, Interim Director, ADHE, and Ms. Cynthia Moten, Director for Academic Affairs at ADHE.

During the fall semester Dr. Watson collaborated with Dr. Sobecki and McGraw Hill Publishing Company to modify a text to meet the course goals and objectives as adopted for Quantitative Literacy. Those materials are being pilot-tested at UCA during the spring 2013 semester.
Greg Sheffer Presents at ASIOA Meeting

Gregory Sheaffer (an undergraduate physics student) and his mentor Dr. Rahul Mehta (department of Physics and Astronomy) attended the 5th meeting of American Scientist of Indian Origin in America (ASIOA). The meeting took place at the University of North Texas, January 19-21, 2013. Gregory made an oral presentation titled “Elastic Modulus Analysis of Bones Exposed to Microgravity.” A former physics major, Niravkumar Patel, was also an author on this research that was funded by Arkansas Space Grant Consortium (ASGC). Dr. Mehta was also an author on another ASGC supported research abstract titled “Hindlimb Unloading as a Model of Pre-diabetes,” which was presented by Dr. P. Chowdhury of University of Arkansas for Medical Sciences.
Throughout the Himalayan foothills is a wild cat so secretive and mysterious that local people refer to it as the ghost of the forest. Many field researchers who have dedicated their lives to preserving this species have gone their entire careers without ever spotting one in the wild. The cat is known as the Clouded Leopard (Neofelis nebulosa) and is one of the world’s most arboreal cats. Small, agile, and extremely camouflaged - they can quickly vanish without a trace. Because of this, creating and managing conservation programs for the species is a very daunting task. However, some biologists were not about to let this species vanish into the history books.

The Smithsonian Conservation Biology Institute, located in the mountains outside of Front Royal, Virginia, took on the difficult task of establishing a successful breeding population at their facility. Obtaining the cats was easy enough but courtship, let alone breeding, rarely occurred. Male aggression would escalate in the blink of eye often leading to deadly consequences for females. What resulted from these observations was a collaboration of many different conservation fields – reproduction scientists, veterinary specialists, and zookeepers – all with the goal of saving these magnificent cats. A solution was finally found – raising Clouded’s together from a young age allowed successful pairing.

After years of dedication, the breeding program has found great success with populations on the rise throughout the United States. The collaboration of researchers now make up a team known as the Center for Species Survival which focuses on understanding more about the reproductive behaviors of a wide variety of species. Concerning big cats, one of their greatest accomplishments is having a successful tiger birth from in vitro fertilization and embryo transfer. White-Naped Cranes, Eld’s Deer, Micronesian Kingfishers, and Kiwis also find a home here.

Many who are unfamiliar with SCBI’s work often wonder how they are able to accomplish such feats. The answer? Scientists from the center emphasize on training young scientists who they consider will be the next generation of conservationists providing an invaluable resource. This past winter Courtney Dunn, a biology student at UCA, was included in this group of students. She found herself working with the Carnivore Department who cares for and leads the main Clouded Leopard breeding program in the United States, as well as maintains populations of Red Pandas, Maned Wolves, Cheetahs, and Black-Footed Ferrets. It was much more than simple husbandry. Courtney was able to prepare for Maned Wolf births and monitor courtship behaviors of Clouded Leopards. Some afternoons she even found herself caring for the domestic cat research colony, which is the center stone for all the major reproduction studies.

Undergraduates, and other graduate students she has met, have always assumed opportunities like this are not available unless you are at a prominent university such as Cornell or George Mason. That is simply not the case. Through a simple quest to find undergraduate research here at UCA, Courtney was invited to join Dr. Vickie McDonald on her bird research projects at the Smithsonian. Connections made during her undergraduate years have carried on and continue to help build the foundation of her career. “It is possible to become an international conservation biologist right here at UCA. All it takes is a great amount of ambition, dedication, and the willingness to work long hours. The payoff? You may find yourself working directly with wild cats, which many conservationists only dream about,” reported Courtney Dunn.
On January 5-9, 2013, Dr. Andrew Mason, Assistant Professor of the Physics & Astronomy Department, attended the American Association of Physics Teachers (AAPT) 2013 National Winter Meeting in New Orleans, LA. Dr. Mason presented an oral presentation titled “Reflection on Problem Solving: Application to Life Science Students.” This presentation discussed a teaching technique he is currently evaluating in one of his courses, in which he gets his students to diagnose errors on a recent homework problem solution attempt. This technique is based on Dr. Mason’s dissertation research and could possibly lay groundwork for a future research project.

Dr. Mason also presented a poster titled “Computer Coaches for Problem Solving: Application to High School Physics.” This poster describes a project in collaboration with UCA student, Mishal Benson, that entails the use of computer modules that train users in an expert-like problem solving method in introductory university-level physics. These modules are part of a project in collaboration with the University of Minnesota-Twin Cities. Currently Mishal and Dr. Mason are in the early stages of a project in which they investigate the usability of these modules in a high school setting. Their goal is to edit a set of modules according to recommendations from area high school teachers and also analyze feedback for future testing.

Dr. Andrew Mason also attended a workshop entitled “XCode for iPhone and iPad.” This workshop introduced participants to programming web applications in portable Mac products. Dr. Mason is currently interested in developing the previously mentioned computer modules as web applications from their current platform.

Finally, Dr. Mason was named Vice Chair of the AAPT Area Committee on Graduate Education at the end of the meeting. The position is a one-year term and the duties entail assistance to the Area Committee Chair in outreach, both within the context of AAPT national meetings in the form of sessions and workshops, and also outside the context of the meetings in terms of general outreach.
Starting the New Year with an Undergraduate Women in Physics Conference was an awesome opportunity and motivational to all the young women involved. Having previously attended a Woman in Physics conference the year prior, there was nothing but excitement waiting at the University of Texas (UT) in Austin. This year there were 5 women that attended the Undergraduate Women in Physics Conference; Rebecca Brinker, Mary-Margaret Block, Erin Moravec, Sarah Spellmann and, Shelby Burns. The group had a wonderful time traveling to UT Austin, staying in Dallas the morning of the conference allowing them to experience the Perot Museum of Nature and Science which had just been constructed December 2012. Having the opportunity to enjoy such an awe inspiring architecture and interactive exhibits definitely set the mood for the conference later that day. The conference was filled with well-planned talks and meals as well as time to socialize with fellow women on physics. It was a great opportunity to hear from other departments and how they have tackled diversity within their own experiences.

There were many fabulous speakers one primarily stood out among others; Sylvia A. Stern, a Communication and Image Strategist, who came to speak about her experience in a male dominated field. Her speech was very interactive and she was outgoing. She really allowed the group to engage in her speech unlike previous informational speakers. She gave numerous tips on what to do when applying for a job and how to research the company and their environment before going to apply so as to be best prepared. Along with several student talks, there were poster sessions, in which I was involved, presenting my research with Dr. William Slaton on Wineglass Resonance. The attendance for the poster session included several students as well as the visiting faculty. Overall, this was an enriching experience and allowed the other girls who are pursuing physics careers to view what is out there and all the different possibilities, and also to be aware that women are a minority, and how to best succeed in any field that is chosen. (cont. on the next page)
Women in Physics (Cont.)

Maggie Block:
“One of the great things about going to WIP was the networking opportunities available. I also enjoyed being able to hear about different areas in Physics research. As a freshman in Physics, this greatly helped in narrowing down my focus in potential research opportunities.”

Sarah Spellmann:
“It was very interesting to see so many women who enjoyed physics all in the same room. It was a great opportunity to see a large campus with so many physics labs. We were able to not only meet and hear presentations from other undergraduates but also graduate students and graduates who are currently in the workforce.”

Erin Moravec:
“I enjoyed the Women in Physics Conference and finding out more about current research and opportunities in physics.”

Rebecca Brinker:
“The experience was unreal. At first it was overwhelming being around so many intelligent women in physics from prestigious places all over the United States. In the end of the conference it was so comfortable though. The women were normal, laid back, funny people who, little to my belief, started exactly where we are today; in small universities taking the most basic of classes in Physics. Being able to talk with these women, as well as the other students that came to learn, ignited so much enthusiasm towards what I can accomplish.”

Bays & Bayous Symposium

On November 14-15, 2012, Jennifer Wang and David Mitchell presented a poster at the Bays and Bayous Symposium in Biloxi, MS: “Does one rebuilt house bring back evacuees?” Many nonprofits rebuilt houses throughout New Orleans after Hurricane Katrina. Using building permit data and a GIS approach, Drs. Wang and Mitchell asked, how can government and nongovernmental organizations best “reseed” a city with rebuilt homes after a natural disaster? They analyzed whether the rebuilding efforts of The Phoenix of New Orleans from 2005 to 2009 influenced the decisions of neighboring residents to return and rebuild.

Dr. Wang is a Research Associate and Adjunct Instructor in the Department of Biology, and David Mitchell is an Assistant Professor in the College of Business, Department of Economics, Finance, Insurance, and Risk Management. Bays and Bayous is a biannual conference organized by the Mississippi-Alabama Sea Grant to disseminate marine science research and coastal environment initiatives. Drs. Wang and Mitchell’s research is supported by the Mississippi-Alabama Sea Grant.

Student Presents at the American Physical Society Prairie Meeting

In November 2012, Physics graduating senior Nick Martinez and Dr. Azida Walker, assistant professor in the Department of Physics and Astronomy, attended the American Physical Society Prairie Meeting at Kansas University. Nick presented his work on "The use of NRS pulses to select among competing Markov Models for the same Ion Channel".
January 17-21, Melissa Beltran (Senior, Computer Science), Mishal Benson (Senior, Secondary Science Education), and Ashley Hicks (Senior, Physics) traveled to the University of Illinois Urbana-Champaign to participate in the 6th Annual Midwest Conference for Undergraduate Women in Physics. (top pic. – from left to right, Melissa, Ashley, Mishal)

Before the conference officially began, some students spent the day in Lemont, Illinois at Argonne National Laboratory in Lemont. A one-on-one guided tour allowed the students to explore three of Argonne’s major highlights—ATLAS, the Nuclear Engineering Museum, and the Advanced Photon Source. (bottom pic.)

By Saturday over 240 female students and leading female physicists had gathered at the University of Illinois to listen, learn, and share with each other. Many of the scheduled talks were research heavy, with a lot of focus on particle physics, nuclear physics, and biological physics. In between discussions of research, however, women discussed bias in the workplace, how to thrive and be confident in a male dominated career path, and how to shoulder some of the burden that may come with raising a family while being a scientist.

Notable speakers from the University of Illinois lineup include Dr. Young-Kee Kim, Deputy Director of Fermi National Accelerator Laboratory (Fermilab), and Dr. Kawtar Hafidi, a physicist at Argonne National Lab.

Overall the conference was exciting and encouraging. For most of the women in the room—those whose departments may have one female faculty member and one or two female students—being a part of such a large gathering was an eye opening experience. It was also a wonderful way to network and make connections for the future.

The true impact of these conferences, though, is that they inspire women to return to their universities and actively work to increase the participation of female students within their department. Hicks had participated in a similar conference in January 2012 along with a classmate, Shelby Burns. Both women were inspired to return to the conferences again, this time as mentors for six other women who were attending the conference for the first time.
Over winter break, senior physics major Matt Hankins presented his research with the Stratospheric Observatory for Infrared Astronomy (SOFIA) at the American Astronomical Society (AAS) Meeting in Long Beach, CA. Matt became involved with this project as part of a summer Research Experience for Undergraduates (REU) at Cornell University. While working with this group, he has been working to study high mass evolved stars in the Galactic Center Region based off observations taken with the SOFIA telescope during early science phases. High mass stars in the Galactic Center Region are especially interesting to astronomers, because there seems to be a higher concentration of very massive stars within the central 100 ly of the Milky Way compared to other parts of the galaxy. Currently this anomaly is not well understood, but astronomers think that it may be due to the unique environment created by the central supermassive black hole. One of SOFIA’s primary goals is to study the galactic center to understand the unique phenomena in this region. Matt’s research has focused on a set of highly luminous mid-infrared objects located in a large stellar cluster in the galactic center, known as the Quintuplet Cluster. These objects are thought to be highly massive stars, which are currently undergoing the final phases before ending their lives in violent supernova explosions. While at the conference, Matt participated in an AAS media event where he presented his research as a part of a panel about the galactic center. Since then, his and his collaborators research has been posted in a number of popular science outlets and is the topic of a NASA press release (http://www.nasa.gov/mission_pages/SOFIA/13-010HQ.html).

Side by side of SOFIA/FORCAST mid-IR image (NASA/DLR/URSA/DSI/SOFIA/FORCAST/Hankins et al.) with HST/NICMOS 2 μm image (NASA/HST/STScI/AURA). This shows the difference in looking at the near-IR versus the mid-IR, which is primarily the dust in gas clouds that are heated by nearby sources.
The year 2012 was yet another productive year for the Department. We are excited to be part of the new UCA STEM Teach Program (more details elsewhere). We are very optimistic that this new program will improve the quality of mathematics teacher education. The department developed the Quantitative Literacy course with full transferability as an alternate general education mathematics course for those students whose curricula do not require College Algebra. This is a major milestone with respect to mathematics component of the general education courses. We are proud that our own Dr. Charles Watson lead this effort for the state. One of the departments long term goals was to convert our 5+5+3 credit calculus sequence to 4+4+4 to align with the other major universities in the state as well as in the region. This was accomplished in 2102. We are very proud that our own Dr. Weijiul Liu received the UCA’s prestigious Research, Scholarship and Creativity Award for the AY 2011-12. Dr. Patrick Carmack and Dr. R.B. Lenin have continued their research collaborations with the University of Texas Southwestern Medical Center in Dallas and UMAS respectively. Dr. Arrigo and his undergraduate research student Brandon Ashley received 2013 SURF grant. We awarded a total 33 math degrees in 2012 which included 24 undergraduate degrees. For the AY2012-13 we have recruited 20 graduates students in our program, which is a record. Last but not least, Drs. Donna Foss and Lawrence Huff, who have contributed so much to UCA and in particular to the Department, are retiring at the end of Spring’13.

CCA Grant to Excel Students’ Complete College Level Math

In Spring 2012, mathematics faculty members at the University College, Ms. Lisa Christman and Ms. Jo Karen Hudson, and Dr. Charles Watson, Associate Professor of Mathematics, were chosen as team members for the Complete College America Grant project, funded by Gates Foundation. The grant required changing the traditional Beginning and Intermediate Algebra courses into one modular course. One of the purposes of the Grant was to have students complete their remedial and general education math classes early in their academic careers. According to the grant requirements, the modular course needed to be individualized, self-paced, technology driven and non-lecture. Half of the developmental math students on campus participated in the redesigned classes in Fall of 2012. Christman and Hudson spent the spring and summer writing a workbook, creating 63 video lectures, and preparing homework assignments, quizzes, pretests and posttests for the modules. UC College mathematics faculty members Mr. Keith Pachlhofer, Ms. Debbie Bratton and Ms. Rita Fielder also taught classes using the new modular course design in the fall 2012. Math Graduate Teaching Assistants provided help to individual students during the lab sessions. The modular courses for Spring 2013 have been renamed “Progressive Mathematics.” UC offered one section of the modular course during the first half of the semester paired with College Algebra the second half of the semester. All of the students who completed the modular course in the first half of the semester successfully completed the College Algebra class that same semester. UC will be offering more half-semester classes in Spring 2013. Ms. Jo Karen Hudson, mathematics faculty in the University College contributed to this article.
After many years of distinguished service to UCA, Dr. Donna Foss and Dr. Lawrence Huff are retiring at the end of this spring semester. To express our sincere thanks, in the following we present the answers given by both Drs. Huff and Foss for the questions collectively asked by the faculty members and staff in the department.

An interview with Dr. Lawrence Huff

About the Past…

SM: Where is your hometown and what brought you to UCA?
LH: My hometown is Akron, Iowa. I learned of an opening for a position in the mathematics department at UCA from Dr. Gary Bogár, a Montana State University mathematics faculty member, who attended graduate school with Dr. James Dombeck, a UCA mathematics faculty member. I sent my first application to UCA. I was invited for an interview at UCA. Soon, I was offered the position, and I accepted the position.

SM: What were you like as a mathematics student in school and college?
LH: I was a good mathematics student in school and in college. Mathematics was always my favorite subject. I even enjoyed word problems when I was in grade school.

SM: Why did you select mathematics and teaching as a career?
LH: The first year that I was a graduate teaching assistant at the University of South Dakota, I really enjoyed teaching at the university level. It was fun to work with students and I thought it was great to have an office on campus.

SM: Who inspired you in your early career?
LH: At the University of South Dakota, I was inspired by Dr. Wayne Gutzman, my calculus teacher, Dr. Charles Frick, my undergraduate advisor, and Dr. Wallace Raab my master’s thesis advisor. Dr. Myron Henry, my Ph.D. thesis advisor at Montana State University, was also an inspiration. During my career at UCA, Dr. David Peterson was always encouraging.

SM: What other fields are you interested in outside of mathematics?
LH: I have interests in the fields of physics, computer science, and pharmacokinetics.

Present…

SM: What are your hobbies?
LH: My hobby is to maintain the family farmstead in South Dakota.

SM: What changes have you seen in your 35 year career at UCA?
LH: When I started at UCA, teaching was emphasized. Research was valued but not expected. The teaching load for new assistant professors was fifteen hours. Currently, teaching is important, research is necessary and new assistant professors typically have a nine hour teaching load. When I started most of the mathematics faculty had hometowns in Arkansas. Now we have faculty members from all over the world.

SM: What advice do you have for future math students?
LH: If you love mathematics, spend the time and give your best in every mathematics course that you take. Take more mathematics courses than just those that are required. Try to relate topics from different mathematics courses to each other. Be willing to study math on your own during the summer break.

SM: What advice do you give to new and future faculty members?
LH: First organize your time to spend a great deal of effort to developing and advancing your research agenda. Be willing to spend more time on developing good teaching practices in a few courses. Expand to teaching more courses as time goes on. Get to know and work with UCA students. UCA students respond well to encouragement. (cont. on the next page)
Interview with Dr. Huff (Cont.)
SM: You were one of the leaders in the establishment of our applied math track at the undergraduate level and subsequently the graduate level. Did you envision the programs as they are today? Did you ever think that the department would have a Masters in Applied mathematics?
LH: The undergraduate applied mathematics program has developed about the way I expected it to. The program has been enhanced by the addition of a few more courses. I expected the Masters in Applied mathematics program to do well but I did not expect it to be as popular as it is today.

future
SM: What do you plan to do after you retire from UCA?
LH: I plan to travel with my wife Jaynette. We will divide our time between staying here in Conway and at our family farm in South Dakota. I plan to continue maintaining the family farmstead. I plan to read mathematics and work mathematics problems.
SM: What are you going to miss most about working at UCA?
LH: I will miss the students, especially the ones that stop by after class or come to my office for help. I will miss my colleagues in the mathematics department and I will miss my office on campus. On behalf of the students, faculty and staff, we want to thank Dr. Huff for his outstanding contributions to the Department of Math and UCA Community. All the best to Dr. and Mrs. Huff.

An interview with Dr. Donna Foss
Past...
SM: Where is your hometown and what brought you to UCA?
DF: I was raised in Little Rock and attended grades 1-12 there, including Hall High School. After two years at Ouachita Baptist University, I graduated with a B.S. in mathematics from UALR. After eight years of teaching at Little Rock Central High School, Fort Walton Beach High School, and Pulaski Academy, I returned to school at UCA and graduated with an M.S. in mathematics. Dr. James Dombek hired me as adjunct instructor for two years and then full-time in 1980.
SM: What were you like as a mathematics student in school and college?
DF: I was a fairly conscientious high school student (5th in graduating class) and graduated from college in three years.
SM: Why did you select mathematics and teaching as a career?
DF: I have always enjoyed mathematics and teaching my fellow classmates. My interests in science led me to briefly select other majors (biology, nutrition, medical technology, bacteriology), but each time I investigated some other career, I returned to mathematics as my first and most enduring interest. Tutoring others throughout my education confirmed my desire to make teaching mathematics my career.
SM: Who inspired you in your early career?
DF: Inspiration usually came from parents, teachers, and colleagues in the department. When I returned to school at the University of Memphis, Dr. Robert Kleinsasser made me believe that I could contribute to educational research (ATE Dissertation of the Year). However, I shall never forget the encouragement that Dr. Buchanan, Dr. Griffith, Dr. Peterson, and Dr. Seifert provided during my return to school to pursue a doctorate. They always made me feel that I could be successful and supported me when I was chair of the Department for eight years. I could not have accomplished anything without the support of my UCA colleagues and my husband, Jim. No matter the circumstances, he always provided faith and encouragement.
Present..
SM: What changes have you seen over your 35-year career at UCA?
DF: UCA has grown from 3400 students to about 11,000! This change in itself has brought with it new faculty and friends, new buildings, new goals, and new administration. Throughout the years, the faculty has not lost the desire to place the education of our students at the top of the priority list. Admirably, I believe the majority of the UCA faculty will go the “extra mile” to help students achieve their educational goals.
(cont. on the next page)
A poster presented by mathematics majors. Thomas Deatherage and Brandon Ashley, mentored by Dr. Danny Arrigo, titled "Hopf-Cycle Type Transformations for a Viscous Burger Equation" received honorable mention as an outstanding poster at the Joint Mathematics Meetings held in San Diego during the second week of January 2013. JMM is the premiere mathematical meetings in the country attended by well over 6000 mathematicians. There were a total of 304 posters presented at the meetings including some by undergraduates from Princeton, Harvard, MIT, Rice, University of Chicago, University of Michigan. Only 15% were recognized as outstanding and the above poster by UCA math students is one of them. Both Thomas and Brandon conducted their research for the project during summer 2012. Brandon was awarded a 2013 SURF Award to continue his research with Dr. Arrigo.
Dr. Uma Garimella, the director of UCA STEM Institute, coordinated the second AP Science Saturday Prep session. Approximately 200 students from Conway, Greenbrier, Dover, Beebe, and Russellville school districts attended this event. The event consisted of seven consecutive review sessions for AP Biology, Chemistry, and Physics which were held in the College of Business building from 8:00 a.m. to 12:30 p.m. Students reviewed topics such as immune system, nervous system, water potential, nervous system, kinetics, equilibrium, and momentum. Ms. Penny Hatfield, Sr. Assoc. Director of Admissions, held an information session and gave door prizes to the students. Breakfast items were provided by the Provost’s office, Aramark, and General Mills.
Planning is underway for the 2013 Arkansas Curriculum Conference (ACC). Over 1200 teachers attend this professional conference each year at the State House Convention Center. The first meeting was held at the UCA campus on February 2, 2013. UCA STEM Institute staff played an important role in planning and conducting the conference. Ms. Belinda Robertson, Math Specialist, is chair of the hospitality committee, Dr. Uma Garimella, Director, is the co-chair of the registration committee, and Ms. Minnietta Ready, Science Specialist, is part of the publicity committee.

ACC is an annual Arkansas Department of Education approved professional development curriculum conference for K-12 educators of English/Language Arts, Math, Science, and Social Studies. This is one of the state’s best STEM Conferences that provide quality professional development to the educators of Arkansas. ACC is sponsored by state organizations such as the STEM Centers, Arkansas Council of Social Studies (ACSS), Arkansas Council of Teachers of English and Language Arts (ACETLA), Arkansas Council of Teachers of Mathematics (ACTM), and Arkansas Science Teachers Association (ASTA). The Arkansas Curriculum Conference offers more than 200 professional development sessions that are designed to explore these new and future standards, such as the Common Core State Standards in math and literacy, and Next Generation Science Standards to provide educators the tools and understanding for classroom application.

Offering Free Graduate Course for 10 Science Teachers

The UCA STEM Institute received a $20,000 grant from the Library of Congress to offer a 3-hour graduate course for K-12 teachers. Dr. Garimella is the project director.

“This is Our Town: Using Geocaching as a Portal to Cross-curriculum Teaching in the Classroom” this class is a customized professional development (PD) course that will use the Library of Congress’s digital primary sources and geocaching as a portal to cross-curriculum teaching in the K-12 classroom. The grant funds will cover tuition fees for ten teachers. This content-rich course: “This is Our Town” will be offered in the summer of 2013 to ten 4-12 grade public and private math and science in-service teachers. Dr. Debra Burris will teach the course; she will focus on strengthening the participants’ content knowledge, and develop skills to incorporate the Library of Congress primary resources and geocaching into their cross-curricular lesson plans. Participants will have an opportunity to develop lesson plans and teaching materials for use in their future classrooms. The course will have more than 30 hours of training that includes a three-day intensive 2013 summer program (18hrs) followed by two one-day (12hrs) follow-up sessions during the 2013-2014 academic year. Participant teachers will be required to submit portfolios of all the lessons developed. During the summer training teachers will strengthen their content knowledge, and develop skills to incorporate the Library of Congress primary resources and geocaching into their cross-curricular lesson plans. During the follow-up sessions, the instructors will observe the participants implementing of the lessons in their classroom. If needed, the instructors will assist these teachers in teaching model lessons, in using the Library of Congress resources, or team-teach the class.
The UCA STEM Institute has six grant projects that provide professional development training, teaching resource kits, and in-class support to math and science teachers in Arkansas.

More than 95 teachers from 29 schools are enrolled in these programs. Professional development sessions are held monthly on a Saturday during the academic year and 1 to 2 weeks in the summer. The sessions focus on Common Core Mathematics and Science standards with integration of literacy and next generation science standards. The teachers also get training on the use of technology such as ipads, labquests, proscopes, Ti84, and SMART Boards in classroom. Faculty from Mathematics, Biology, Chemistry, and Physics & Astronomy provide some of the trainings.

The training sessions are followed by classroom observations and long-term support through mentoring and modeling lessons to ensure the use of materials and projects in the classrooms.
Through a collaborative, state-led process, new K–12 science standards are being developed that will be rich in content and practice, arranged in a coherent manner across disciplines and grades to provide all students an internationally benchmarked science education. The NGSS are based on the Framework for K–12 Science Education developed by the National Research Council.

In addition to the state teams and writers, a critical stakeholder team of hundreds of members, representing K–12 educators, administrators, higher education faculty, scientists, engineers, business leaders, policymakers, and key organizations were involved in the process. This team provided confidential feedback at critical points in the development process. In addition to these established teams and feedback loops, there were opportunities for public review. The standards were released for public comment twice during the development process before the completion of the final document. The first public review was conducted from May 11 – June 1, 2012. The second draft was accessible for public review from January 8 – January 29, 2013.

To assist the public in reviewing the document, on January 14, 2013, UCA Stem Institute hosted the NGSS second public review session. The Computer Lab Room 214 in the Math Building was open to all stakeholders, professors, K-12 teachers, administrators, pre-service teacher-students, and all other educators to view and comment on the Science Standards draft. UCA utilized this meeting time to display the online capabilities of the NGSS and to review the overall structure of the standards. The reflections of the draft will be uploaded onto the survey website for a final input on the format, structure, and content of the new standards.

Participants attended the Science Standards review, presented by Ms. Minnietta Ready, UCA STEM Institute Science Specialist, reflected on the need for revised science standards in our state is emergent.
The UCA STEM Institute offered Praxis II review sessions to support Dr. Carolyn Williams, College of Education, a $2.3 million grant from the U. S. Department of Education. The Partnership for Transition to Teaching (TTT) grant provides tuition for candidates who are enrolled in required MAT courses for up to $5000.00 to cover actual costs of the total program. Recent college or university graduates, career changers, paraprofessionals, and Science, Technology, Engineering, and Mathematics (STEM) majors are specifically targeted to become mathematics and science teachers through this funding opportunity.

Praxis II Mathematics, Life Science, Physical Sciences, and Earth Science review sessions were offered free for TTT participants and for UCA students. Funding for this project was provided by the TTT grant. Jerry Mimms from the Department of Biology, as well as, Long Le and R. B. Lenin from the Department of Mathematics, conducted the Saturday sessions. Dr. Garimella, director of UCA STEM Institute coordinated the program.
Drs. Ginny Adams, Reid Adams, & Sally Entrekin, Biology faculty members, had students give oral presentations at the annual meeting of the Arkansas Chapter of the American Fisheries Society. Students presented from all the major universities in the state and approximately 150 aquatic professionals attended. All of UCA’s students did a great job. In fact, UCA students won the only awards given:

Best Graduate Student Paper: Adam Musto “The Relationship Between Land Disturbance and Trace Elements in streams of North-Central Arkansas”

Best Undergraduate Student Paper: Haley Seay “Examining the Spatial Distribution of Argulus Spp. on Arkansas Alligator & Longnose gar”

Congratulations to these students!!!!!
On February 7th the College of Natural Sciences and Mathematics participated in two Science Nights (same night, same time). Splitting faculty, staff, graduate, and undergraduate students, the College displayed its commitment to outreach and community service. Carl Stuart Middle School and Mayflower Elementary students enjoyed a night of chemistry tricks, microbes, fish, turtles, and armadillos, DNA extractions and insects, and much more. Computer and math games completed a show characterized by the wonder and curiosity of both children and parents. We will be attending a similar event on the 28th of February over at Ruth Doyle Middle School. There is still time to join the fun!
Dr. Vamsi Paruchuri, Associate Professor of the Computer Science Department, at the University of Central Arkansas, was appointed by the National Science Foundation (NSF) to serve as a reviewer on a panel in the Directorate for Computer and Information Science and Engineering (CISE). The panel met at NSF headquarters in Washington D.C. in October 2012. The NSF is a primary funding agency for providing grant money to institutions of higher education throughout the United States. The panel review committee considers proposals submitted by colleges and universities, and then makes recommendations to NSF. The process is competitive, and federal money is awarded to selected top proposals.

“The appointment offers several opportunities. As a panelist, I can see the review process within NSF. It also provides an opportunity to interact with several NSF Program Directors and learn about active funding opportunities for us at UCA. It brings recognition to UCA, and is a great opportunity to give back to the scientific community,” said Dr. Paruchuri.

In 2011, Dr. Parchuri has received funding from NSF to host a Research Experience for Undergraduates (REU) Site at UCA (Co-Pi: Dr. Yu Sun). This REU site is the first CISE site in the state of Arkansas.

For more about the NSF: (http://www.nsf.gov/about/)

The UCA Student Affiliate of the American Chemical Society was featured in the spotlight portion of the publication, inChemistry. The back cover article includes interviews with chapter sponsors and members with the goal of providing other chapters with suggestions for organizing a successful chapter program. The UCA chapter was recently selected as an outstanding chapter and continues an active schedule of professional, service and social events under the sponsorship of Drs. Dooley, Steelman and Yarberry.
Over 90 undergraduate students from 14 Arkansas universities and colleges presented posters highlighting their original research in science, technology, engineering, and mathematics (STEM) February 6, 2013 in the Arkansas State Capitol Rotunda in Little Rock. Nine of these students were from the UCA College of Natural Sciences and Mathematics.

State lawmakers, high school students, media, and the general public were on hand to visit with students and hear about their work.

“We science and math types can sometimes be guilty of not clearly communicating the importance of our work, and this kind of event remedies that to some extent with the general public,” explained Patrick Desrochers, principle event organizer. “Talking to students, they know if they hit the mark with their audience. You could see the evident excitement and satisfaction in them when they knew they had explained it well and the person they spoke to left them with something new.”

One of the goals of the event is to promote a greater understanding and appreciation of the level of complex research in natural sciences and mathematics conducted by students at Arkansas colleges and universities. Another goal is increase enrollment and retention of students in STEM fields.

“Arkansas too, unfortunately, lags much of the country in STEM degrees earned by its citizens. This even further emphasizes the need to communicate the experiences these STEM students earned all across the state,” he said.

This is the second consecutive year for the Arkansas STEM Posters at the State Capitol. It is modeled after biennial national events organized by the Council on Undergraduate Research in the national Capitol as well as other established statewide events in Missouri, Kentucky, and North Carolina.

This year Governor Mike Beebe again visited with students and was interviewed by the UCA media office. A YouTube video was prepared and is posted at https://www.youtube.com/watch?v=_wsCqw-EdQI&list=PLlnJ8RN19iWatPDQhOyr59TSSKENkmsS&index=1. Also on hand were Lt. Governor Mark Darr as well as many representatives and senators from around the state.

Dr. Will Slaton, UCA Physics faculty member, was also instrumental in promoting these events. This year he established an organized web presence for the event (http://faculty.uca.edu/wvslaton/ARposters/) as well as a Twitter feed to reach a broader audience.

UCA CNSM has a proud history and established culture of conducting and promoting undergraduate research. This statewide event allowed it to highlight this effort.

Fredericka Sharkey, UCA Govmt Relation, contributed to this.
Posters at the Capitol Cont.