# University of Central Arkansas Department of Mathematics Newsletter

# **Signs of Mathematics**



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# From the chair's desk...

As we begin another year, it is my pleasure to report that in the 2010 calendar year,



the Mathematics Department was very busy and productive. One of the highlights for 2010 was hosting the RCML national conference. This national conference, which attracted more than 70 participants from all over the country, was organized by the Department in conjunction with the Arkansas Center for the Mathematics and Science Education at UCA. A proceeding of the conference was published. The conference was a huge success. UCA's first high

performance computing cluster dedicated to research and educational endeavor, created by the Mathematics Department last year, is now operational and going very well as intended. Despite budgetary shortfalls, we were given permission to search for two tenure-track positions in mathematics education to begin in fall 2011. As I write, the search is strongly progressing and I am more optimistic than ever that it will be successful. These new hires will help us strengthen our mathematics educations programs, which are already considered as the best in the state, and explore new programs. Mrs. Loi Booher, who was a an emergency hire in 2009, joined the Department as a Lecturer I and has already undertaken addition assignments such as mentoring the graduate teaching assistants teaching Business Calculus, and assisting with organizing the ACTM Regional Math Contest.

Our programs are expanding and becoming highly productive. In 2010, we awarded 18 undergraduate degrees and 13 graduate degrees. We have made improvements in our curriculum by adding upper level courses such as the Computational Mathematics, Stochastic Process and Mathematical Biology. For the third year in a row, we have been able to secure extramural funding in the amount of \$200,000 for research and K-12 teacher training. (Continued on page 7)

# **RCML Conference**

The Department of Mathematics in conjunction with the Arkansas Center for



Science and Mathematics Education (ACMSE) hosted the 37th national conference of the Research Council on Mathematics Learning (RCML) during March 11-l3, 2010. Dr. Carolyn Pinchback, Professor of Mathematics and Vice president for RCML Conferences, and Dr. Umadevi Garimella, Director of ACMSE were the main organizers of the conference. More than 80 educators from 15 states participated in the national conference that featured two keynote lectures and 63 sessions on

mathematics learning. The sessions examined topics such as mathematics learning for students who are learning English as a second language, how demographics (Continued on Page 6)

# **FACULTY NEWS**

# Grants

### **Formative Assessment** Grant

### Dr. Linda Griffith,



Professor of Mathematics. received a grant extension of \$75,934 to continue her

work on formative assessment target testing in Mathematics, Literacy and Science. Currently 136 tests are released for each of the three formatives by Dr. Griffith and her collaborators. This is the third extension of grant, which is funded by the Target Interim Assessment Consortium consisting of the Southeast Arkansas Education Services Cooperative and other partnering Education Services Cooperatives.

#### **Gulf War Illness Syndrome**

Dr. Patrick Carmack,



Assistant Professor of Mathematics, has received contracts in the amount of

the last 18 \$80,308 in months from the Department of Veterans Affairs through the University of Texas Southwestern Medical Center at Dallas, for conducting statistical analysis in brain imaging research to improve spatial modeling to better detect affected portions of the brain in diseased subjects. Dr. Carmack, in conjunction researchers at the with UTSWM at Dallas and Southern Methodist

University, is pioneering the use of spatial statistical modeling to analyze brain scan data from Persian Gulf War veterans to identify specific areas of their brains affected by Gulf War Syndrome. The new techniques have already been successfully applied to compare three dimensional Single Photon Emission Tomography (SPECT) brain scans of people suffering from the syndrome with those of a healthy control group. The team is working with renowned UTSW epidemiologist, Dr. Robert Haley, one of the foremost experts on the syndrome.

#### **SURF Grant**

Dr. Danny Arrigo, Associate



Professor of Mathematics, and undergraduate mathematics major, Jackson Fliss, received a

State Undergraduate Research Fellowship in the amount of \$3990 from the Arkansas Department of Higher Education to conduct research on the project "Non Classical Symmetries of the Burger Systems." Preliminary results of the project were presented by Jackson Fliss at the joint national meetings of the American Mathematical Society and the Mathematical Association of America in San Francisco in January 2010. Later the complete work was published in the Journal of Mathematical Analysis and Applications, a top tier research Journal in mathematics.

### K-4 Smarts

Dr. Umadevi Garimella (PI), Director of the ACMSE,



a n d Dr. Ramesh Garimella (Co-PI) received а \$67,225.00

grant titled K-4 SMARTS form the Arkansas Department of Higher Education to work with elementary teachers from the Little Rock School District, North Little Rock School District and Pulaski Special School District. The objective of the grant is to increase the science content knowledge and skills of the teachers by integrating it with mathematics and literacy programs. Workshops were conducted during 2010 summer and fall semesters for the teachers to provide research-based science instructional strategies and methods that are proven to work with at-risk learners. The workshops were conducted by a team of UCA faculty members which included mathematics faculty members Dr. Jean McGehee and Dr. Carolyn Pinchback.

# New Lecturer in **Mathematics**

Our national search to fill



position for 2010-11 was successful. Mrs. Loi 🖉 Booher was

selected for this position from a pool of 55 well qualified applicants across the country. Mrs. Booher received her BS in Mathematics in 2002 and MA in Mathematics Education in 2005 from UCA. She has been an instructor in the department for the past three years and has taught a wide range of general education mathematics course. Prior to joining UCA, she worked for the Arkansas Electric Cooperative Corporation in Little Rock.

# Summer Research

Dr. R.B. Lenin received a



2010 summer stipend from the University Research Council to work on a research project

related to the efficiency of parallel computing. Dr. Lenin joined the Department o f Mathematics as a tenuretrack assistant professor in the fall 2009. His area of specialty is applied probability and performance analysis of computer and communication networks.

# Conference **Participation**

On February 23, 2010, Dr. Patrick Carmack, Assistant Professor of Mathematics, gave an invited talk titled "Spatial Modeling and fMRI" in the Division of Biostatistics and Data Collection of the Department of Psychiatry at the University of Columbia.

Dr. Ramesh Garimella gave a research presentation, *On Solutions of an Operator Equation,* at the 2010 Great Great Plains Operator Theory Symposium, held on the campus of the University of Denver from June 14 to 18. About seventy mathematician from all over the world, who specializes in the area of operator theory, presented their research at this annual event.

Dr. Weijiu Liu, Assistant Professor of Mathematics, presented a research paper, An Output Feedback Control for Store-Operated Calcium



Entry and Extracellular Calcium in Yeast Cells, at the 2010 Chinese Control and Decision Conference (2010 CCDC), held in Xuzhou, China from May 26 through 28. The purpose of the conference was to create a forum for scientists, engineers and practitioners throughout the world to present the

latest advancement in Control, Decision, Automation, Robotics and Emerging Technologies.

Dr. Linda Griffith, Professor of Mathematics, was selected by the Arkansas Department of Education to represent Arkansas at the Association of Mathematics Teachers Educators (AMTE) Conference to be held on June 22-23 in Louisville, KY. The main focus of the conference is Elementary Mathematics Specialists State-Level Certification. AMTE invited states to submit applications to participate in the conference. About 21 states submitted applications. AMTE selected only ten states to participate in the conference. Obviously, Arkansas is one of them. The Arkansas team has five members, out which two are from UCA. The other member of the Arkansas team from UCA is Dr. Diana Pounder, Dean of the College of Education.

# **ACTM Math Contest**

On April 24, 2010, approximately 300 high school students from across the state took part, by invitation only, in the Arkansas Council of Teachers of Mathematics State Contest held on the UCA campus. Competition was held in Algebra I, Algebra II, Geometry, Precaclculus and Trigonometry,



Calculus, and Statistics. Dr. Charles Watson (Associate Professor of Mathematics and Director of the ACTM State Contest) and Ms. Aimee Evans (current president of the ACTM) presented scholarships and trophies

to the top three finishers and certificates to the honorable mentions. Dr. Ramesh Garimella, Dr. Carolyn Pinchback, and Mrs. Jennifer Holloway (a GTA in Mathematics) assisted in organizing the contest and with the award ceremony.

# **New Statistics Minor**

The UCA Department of Mathematics' proposal to offer a minor in statistics has been formally approved. The field of



statistics is concerned with ways to explain variability in a data collection. It is the science of making educated guesses in the face of uncertainties. Several majorsincluding biology, business, chemistry, economics, physics, and psychology- will potentially benefit from this new minor. It will offer students attractive skill sets for

data analysis, and will help students engage in undergraduate statistical research. A degree in mathematics with a minor in statistics will prepare students for a career in banking, insurance, data analysis and actuarial science. The new minor requires eighteen hours that include the courses Statistical Methods I, Statistical Methods II, Linear Algebra, Introduction to Probability, Introduction to Statistical Inference, and Applied Statistics. Nine hours of the course work for the minor must be taken at UCA. In addition to this new minor in statistics, the Department offers minors in mathematics and mathematics education. For more information about the Mathematics Department or its programs, contact 501-450-3147.

### **Silent Contributors**

A large organization like the Department of Mathematics is successful because of many silent contributors who go beyond their call of duty to make things work. Such people are Dr. George Bratton, Dr. Donna Foss, Mrs. Brenda Graham, Dr. Larry Huff, Dr. Jean McGehee, and Mrs. Jennie Welters.

	Important Dates for 2011
March 5	Regional ACTM Math Contest
April 30	State ACTM Math Contest
May 7	Spring Commencement
June 6	Start of Summer Sessions
August 25	Start of Fall Semester





**Professor Charles J. Seifert** is retiring from the University of Central Arkansas after thirty one years of dedicated service. Dr. Seifert has served UCA in a number of roles. He came to the campus as an Assistant Professor in the Department of Mathematics and Computer Science in 1979. He was the Chair of the Department during a period of growth and change in the Eighties and Nineties. He chaired the Department of Computer Science during its formative years when it was separated from the Department of Mathematics. He has also served as Associate Dean of the College of Natural Sciences and Mathematics. The Math

Department asked Dr. Steve Butcher, Associate Professor of Mathematics, to conduct an interview with Dr. Seifert for the 2011 newsletter. The following are Dr. Seiferts responses to Dr. Butcher's questions.

### S.B. Where is your home town and what brought you to UCA?

C.S. I was born and raised in Massillon, Ohio, a small steel town in northeastern Ohio. After growing up in an area that experienced at least a fair share of lake-effect-snowstorms, I applied for jobs at schools in the southern half of the US. In a very tough job market, UCA came through for me.

### S.B. Why did you select mathematics and teaching as a career?

C.S.While in graduate school I knew I enjoyed the mathematics, and I certainly enjoyed the teaching as a graduate student —we were in charge of our own sections of freshman level mathematics. After the first year I got to teach the business calculus course which was more fun than teaching the pre-calculus course, even though it was considerably more challenging.

Toward the end of my graduate school, I made the decision to try to pursue my career in academia. This decision was almost a lack of decision. I felt that I knew and understood what I might be doing in academia, and if I were to pursue an applied job I am not sure I knew what I would be doing. Also, I wanted to continue to learn and do mathematical research. It was my belief that an academic position would allow me to pursue mathematical research. (Continued on page 7)



At five years old, **Professor Samuel Buchanan** sat on the curb across the street from the Florence High School longing the day when he would be a teacher. He would act on his dreams by playing school on a regular basis. He has come a long way from those dreams to UCA as teacher and administrator. Raised in Florence, Texas, about 50 miles north of Austin, Dr. Buchanan claims he never passed arithmetic in his first eigh At t years of school because he needed to be motivated. A teacher sensed this need and moved him from the vocational / agriculture track into Algebra I and "threatened him" into accomplishing a grade of

B. He said this "wonderful teacher inspired him." He made his first A in a mathematics course in geometry which allowed him to use logic and reasoning instead of memorization of arithmetic procedures. Dr. Buchanan's desire to be a teacher was strengthened through these experiences. He remembers that he "wanted to capture that magic of mathematics" this teacher had demonstrated.

In spite of his interest and performance in chemistry, the principal of his high school completed Dr. Buchanan's application for college and marked mathematics for his major, so he was off to Texas Tech as an undergraduate. He actually began teaching after three years toward his degree in mathematics. Having no education courses in preparation, he cites the fear of that first day in front of his own class at Llano High School. One of the students sensed his trepidation and asked in front of the other students, "Is this your first time to teach?" When Dr. Buchanan said "yes," the young man said, "Don't worry, you will be just fine." From that day forward, Dr. Buchanan gives this student credit for inspiring him to continue teaching. (Continued on page 9)

# **STUDENT NEWS**

# Awards 2010

#### O.L. Hughes Award

Ms. Jing Voon Chen is the recipient of



the 2010 O.L Hughes Award, presented every spring to a senior in mathematics w h o h a s a n exemplary academic record. Jing Voon

Chen had a perfect 4.0 GPA. "Jing is one of the best students to come through our program in a long time," said Dr. Bratton, who nominated her for the award. Currently, Jing Voon is a graduate student at the Texas A & M University to pursue a masters' degree in mathematics. The award is given in the memory of late Dr. O.L Hughes, who was the Chair of the Math Department in late 70's to mid 80s. The award carries a citation plaque and a check for \$100 from the O.L. Hughes Scholarship fund.

### Dorothy Long Award

Ms. Kristen Trainor is the recipient of



the 2010 Dorothy Long Award, presented every spring to a junior female student in mathematics who has an exemplary

academic record. Dr. Burg , who had Kirsten as student in his calculus section said, " she is a hardworking student who exemplifies the best characteristics of UCA students." The award is co-sponsored by the Delta Zeta Sorority and is given in the honor of late Mrs. Dorothy Long, who was a mathematics faculty member and the Dean of Women at UCA in 60's. This award carries a citation plaque from the Mathematics Department and a check for \$100 from Delta Zeta.

## Outstanding Graduate Teaching Assistant

Mr. David Ekrut, a second year MS



student in applied mathematics, was the recipient of 2010's outstanding graduate student award. Dr. Charles Watson, who

supervises graduate teaching assistants, said "David does an outstanding job as an instructor. He is always well prepared and interacts well with the students." David received a BS degree in applied mathematics from UCA in 2008 and has a perfect 4.0 GPA in his MS program. David's long term goal is to pursue a doctoral degree in mathematics.

# **Scholarships**

## Charles & Lurene Jolly Scholarship

For the 2010-2011 academic year, the



Department awarded the *Charles & Lurene Jolly Scholarship* to Antoinette Bunting, who is currently a senior seeking a BSE degree in Mathematics

Education. The Charles and LuRene Jolly Scholarship Fund was created as a designated endowed fund of the University of Central Arkansas Foundation, Inc., for the purpose of providing scholarships for students pursuing a degree in Mathematics Education. Antoinette is the third recipient of the Jolly Scholarship.

### Alumni

Mrs. Jenna Erbach Williams, who obtained a BSE degree in 1995 and an MSE degree in 1997 from the Department of Mathematics at UCA, received 2010 All American Teacher of the Year Award from the National Math and Science Initiative. Mrs. Williams teaches mathematics at Greenbrier High School and is an active participant teacher in the UCA concurrent credit program in mathematics.

## Research

Undergraduate math majors Haley Miller and Derek Anderson, mentored by Dr. Fred Hickling, presented a poster titled "Fractal Frieze Groups" at the annual joint meetings of the American Mathematical Society and Mathematical Association of America held on January 5 - 9, 2011 in New Orleans. Friezes are commonly known to exist as relief sculptures on the entablatures of classic architecture. Less commonly known is that linear repeating patterns such as these mathematically go by the same name. Both Miller and Anderson received travel support from the Math Department at UCA and the Conference Organizers to present their poster.



**B.A./B.S. Mathematics** Lucille Busch Jing Voon Chen Derek Damon Ezechiel Degny David Hieronymus Haley Miller Carlos Merino Andrew Muse Austin Muse Sean Patterson Mark Senia Brady Sharp Jon Sumners

**B.S.E. Mathematics Education** Bradley Baker Kristy Clark Alexandria Hook Jordan Short Mary Whitney

### M.A. Mathematics

Benjamin Bell Shasta Chandler Elise Leslie Gray Regina Hays Jennifer Holloway Sherry Jennings Sarah Nordin Benjamin Rodery Brittany Russell Dennis Show Lori Smith Cheryl Winberry

M.S. Applied Mathematics Jason Morris

## **RCML Conference (Cont.)**

affect mathematics scores on the Arkansas Comprehensive Assessment and Accountability Program. Testing and Several mathematics education faculty members and MA students in mathematics education at UCA made presentations at the Conference. The RCML organization seeks to generate, and coordinate research efforts designed to understand and affect factors that influence mathematical learning. The conference allowed for both formal and informal interactions.

# Math Outreach Activities

#### **Professional Development Workshops**

The Department of Mathematics hosted Professional Development Workshops in Calculus, College Algebra and Elementary Statistics on August 2, 3 and 5 of 2010. Twelve teachers from Central High School, Catholic High School (LR), Central Arkansas Christian, Parkview High School, Greenbrier High School, Oak Grove High School and Conway High School attended the workshops which included a joint working luncheon. Drs. Danny Arrigo, Clarence Burg, and Ramesh Garimella, each conducted a half-day workshop on various aspects of the Calculus I course in the morning and afternoon sessions on August 2 and 3. Dr. Charles Watson conducted an afternoon College Algebra workshop on August 3. Drs. Patrick Carmack and R.B. Lenin conducted an all day workshop on elementary statistics on August 5th. In addition to the workshops, Drs. Garimella and Watson spoke about the National Alliance of Concurrent Enrollment Partnership (NACEP) program, curriculum and faculty standards, and required evidence for accreditation of the UCA concurrent program. Follow-up meetings and school visits will be scheduled throughout the academic year. The Mathematics Concurrent program is one of the largest offered through UCA. The Division of the Academic Outreach and Extended Programs provided funds for the presenters' salaries, the luncheon and refreshments.

#### **Upward Bound Program in Algebra II**

Dr. Clarence Burg, Assistant Professor of Mathematics, participated in the UCA Upward Bound program for the third year in a row. From June 14 through July 17 of 2010, Dr. Burg taught a preparatory course in Algebra II. The Upward Bound program is funded through the U.S. Department of Education's Trio program, with the goal of increasing the rate at which participants complete high school and enroll in, and graduate from, colleges and universities. This program seeks to accomplish its goal by providing high school students with additional support and assistance so that they are fully prepared for success at the college level. Upward Bound provides tutors at underperforming high schools during the academic year, special programs about career options and college planning on the weekends and the summer academy hosting at UCA.

During the summer academy, approximately 30 high school students live in a UCA dormitory for five weeks, while they take preparatory classes based on their fall academic schedule.

# **MSI'10**

Ten middle and high school students in this region attended a week-long third annual summer program, sponsored by the Department o f Mathematics, during the week of July 12-16, 2010.



The summer program, popularly known as MSI'10, was designed to enhance students' interests in mathematics, physics, and biological sciences. This year's activities were: (a) Einstein's Special Relativity, (b) The Computational



Revolution, Dr. Balraj Menon, Assistant Professor of Physics and Astronomy presented the activity on Einstein's Relativity. At its very core, theory of relativity is a geometric description of nature. The objective of this workshop

was to exploit this geometric structure and provide the student with a qualitative understanding of the fundamental concepts in special relativity. Dr. Menon used graphical and pictorial approach to special relativity. The other activity, computational revolution, was presented by Dr. Clarence Burg, Assistant Professor of Mathematics. Using the new Callisto Computer Cluster, in conjunction with the state-ofthe-art software, students built 2D and 3D computational geometries of the airplanes wings and computed the flow past these objects. According to the participants' survey conducted at the end of the workshops, the best parts of the summer program were hands-on approach to the activities, topics outside the mainstream of high school curriculum, a visit to the planetarium, and space time diagrams. All participants said that the information provided in the program was valuable and most participants felt that the program made them more enthusiastic about learning science and mathematics. The summer program was funded by a grant from the Arkansas Science and Technology Authority and organized by Dr. Ramesh Garimella, Chair of the Department of Mathematics. For information on future math and science summer programs,

please contact rameshg@uca.edu or call 501-450-3147.

# From the Chair's Desk (cont.)

For the second year in a row we have received SURF grants. Several mathematics faculty along with the mathematics educators offered professional development workshops for the high school teachers. There were eight journal publication, and numerous presentations. Our outreach activities such as the summer program in Mathematics and Science for high school students, the ACTM regional and state contests, and the concurrent courses in mathematics continue to be highly successful and gaining recognition. After long and distinguished careers, Dr. Samuel Buchanan and Dr. Charles Seifert are retiring at the end the of spring 2011. We wish them and their families well in their retirements. See the spotlight section for more information. The percentage of the mathematics faculty, contributing to the UCA Foundation funds, is substantially higher than other departments in the college. Overall, 2010 was a stellar year and we are anticipating that 2011 will be even better. All the best wishes for the New Year. Sincerely, Ramesh Garimella, Chair.

# Dr. Charles Seifert (cont.)

#### S.B. Who inspired you in your early career?

C.S. There were several people who have influenced me. Dr. Joe Diestel was always an inspiration because of his knowledge of mathematics, because of his enthusiasm toward mathematics (and toward life), and because of his interest in mentoring any mathematics student who wanted to learn more mathematics. Joe Diestel was my major professor, and I learned a lot from him through hallway conversations, through dinner conversations, through observations at professional meetings and seminars, and through assigned tasks that he gave me. Oddly enough, I never took a formal course from Joe Diestel.

Diestel has an interesting technique for delivering mathematical talks, including his classroom lectures. He carefully writes out the entire lecture or presentation, studies it, then leaves the written copy on his desk as he goes into the classroom or lecture hall and makes his presentation. He says this technique forces him to have a deeper knowledge of the subject matter before he delivers the lecture.

Dr. Robert Lohman is the mathematics professor who taught me the most mathematics in the classroom. I enrolled in more courses from Bob Lohman than any other professor. He is an excellent mathematician who pays close attention to detail and to how the theorem or technique can be applied to a different setting. His classroom lectures were always prepared with diligence before the term started, in every detail. A concept was introduced, examples given, theorems proved and applications of the theorem, followed by an assignment. All of this was carefully hand written and carried into the classroom every day until the section (a stapled collection of handwritten notes) was completed. Then, the next lecture came from a new set of handwritten pages.

At different times in my career, I have tried to emulate both Diestel's techniques and Lohman's techniques of lecturing. I would have to say that I probably didn't do either mathematician or their technique justice but simply honored them by trying to imitate them. Other mathematicians who influenced me were Bob Phelps from University of Washington, Jerry Uhl from the University of Illinois, Graham Bennett from Indiana University and Pawel Szeptyski from the University of Kansas.

#### S.B. What other fields are you interested in outside of mathematics?

C.S.I have always had some interest in other sciences, particularly physics and chemistry but haven't taken the time to develop those interests. The same could be said about the world of finance. I think I could become interested in the field of finance as it applies to economics or the field of economics as it applies to finance. I don't know enough about economics or finance to intelligently express my interest.

#### S.B. What are your hobbies?

I have always enjoyed doing thing with my hands, fixing 'things,' and maybe even gardening (although I have not done enough gardening to decide if I enjoy it). I have participated in athletics in the past, played softball until I was 48, jogged until I was 58, and I try any activity to help me stay physically fit—a battle I think I am losing.

The one hobby that has lasted for 30 to 40 years is motorcycling. I have developed from a casual Sunday afternoon rider to an avid motorcyclist who likes touring on a motorcycle better than most any other activity. I have averaged more than 10,000 miles per year on my motorcycle since 1993. I am a certified Rider Coach by the Motorcycle Safety Foundation.

#### S.B. What changes have you seen over your 30-year career at UCA?

C.S.My career? I believe the biggest change in any career over the last 30 years is technology, or better stated, the impact of technology on teaching mathematics.

Of course there have been many changes at UCA, but most of these changes were changes that came from growth or from evolution from an institution who hired faculty from the state or the region to an institution who hired faculty from across the United States or around the world.

When I arrived into the Department of Mathematics, I was the 3<sup>rd</sup> faculty member (of about 18 or so) who did not have any previous association with the department. That was the early stage of a transition that now shows less than 10% of the faculty in mathematics had any connection whatsoever with UCA before being hired by UCA. This sort of change in demographics of the faculty is certainly not peculiar to the Department of Mathematics. It is true across campus that for the last 35 years, every position filled has been the culmination of a national search. With different demographics in every committee on campus, different demographics standing in front of the classroom, different demographics in the faculty senate and of course, different demographics in the Administration, the institution has changed from one that was highly regarded in central Arkansas to a national player, in academics as well as athletics and professional organizations.

As far as technology, I continue to believe that we have some distance to go before we figure out just what part(s) of the knowledge base in mathematics is necessary to learn, meaning what should we be teaching? The problem is one can become proficient or knowledgeable when one knows how to find technology available to do the calculations, to find technology available to draw the pictures, and or even to find technology available to do the symbolic manipulation necessary to solve some of the non-numerical problems. Knowing what to teach is becoming more clouded. Teaching the concepts is the obvious answer, but just how much conceptual mathematics can we teach without doing the "max/min" problems by hand?

### S.B. What do you plan to do after you retire from UCA?

C.S. I really don't have a definitive plan. I have been involved in the Conway Kiwanis Club, in Arkansas Bikers Aiming Toward Education, Rolling Thunder, Inc. and in Rider Education.

I think I plan to spend more time with our five grandchildren (ages 5 to 13) because they are growing up very rapidly and soon will not be interested in spending much time with their grandparents. Three of the grandchildren live in Conway while the other two are in Florida now. Next summer the Florida grandchildren will move to Italy, so it will be fun chasing them.

Rolling Thunder (an advocacy group with a mission to raise public awareness and government awareness about POW-MIA issues in particular, and veteran's issues in general) is an activity that both Netta and I are involved with; she is the club treasurer and I am a board member. I expect the commitment to Rolling Thunder will continue and possibly increase.

Netta may do some part-time work as a nurse and I will probably become more involved with motorcycle Rider Education.

I always thought that one of the first things I would do is what motorcyclists call a four corners ride—basically a ride around the perimeter of the continental United States. I always envisioned it as a 30 day ride. Well, even though Netta does tour with me on my motorcycle (or sometimes on her motorcycle), we recently purchased a small Recreational Vehicle (or a large camper), so I am not so confident that I will get to do a 30 day ride.

#### S.B. Do you have any final words to sum up your thirty years at UCA?

C.S. I would be remiss if I did not mention the value of good people around you. The faculty, staff and students of the University of Central Arkansas are such wonderful people I always enjoyed going to work. Seriously, on each day of the last 31 years I was enthusiastic about going to the office. I sincerely believe that this blessing was because of the people I was able to interact with when I arrived at the office.

When I first came here, I knew nothing about Arkansas. I had no idea what to expect. Netta and I agreed that we would give it a shot for four or five years after which, if we didn't feel a fit with the place, we would move on. Looking back over the decades, having become a part of the community and having raised two sons in this family friendly environment, I feel that the day I chose to come to Conway was one of the luckiest of my life.

# Dr. Samuel Buchanan (Cont.)

Dr. Buchanan resumed his education at Texas Tech on an NSF grant where he completed a Master of Arts in mathematics. While teaching at Post, Texas the Superintendent arranged for graduate classes to be conducted at the high school for the professional development of the teachers on staff. In the process, Dr. Buchanan was invited to apply for the doctoral program in mathematics education at the University of Texas in Austin. It was there that his advisor, Dr. Glenadene Gibb, inspired him further. He reports that she could always ask the right questions to elicit the mathematical thinking of her students. This characteristic then became one of his teaching goals.

With a new Ph.D. in mathematics education, Dr. Buchanan applied for teaching positions at five other institutions, but when he met Dr. Darrell Kilman (UCA faculty) at the National Council of Teachers of Mathematics annual conference in Dallas, he was interviewed immediately and then invited to UCA for campus interview. UCA was his first position offer and he accepted and thus his 30-year career at UCA began. A colleague who began teaching at UCA the same year (1980) remarked that students consistently complemented his teaching in terms such as "He is a great teacher." While Dr. Buchanan did serve in administration a number of years, he is currently teaching in the Department of Mathematics and stated that regardless of the positions he held at UCA, "at heart, I have always been a teacher."

After a 45-year career, Dr. Buchanan has seen many changes at UCA and in mathematics education. Mathematics education standards have been revised and based on the philosophy of teaching that Dr. Buchanan adopted as a beginning teacher: motivating students, emphasizing logic and reasoning instead of procedures, and questioning that elicits student thinking. The changes at UCA are exemplified in the growth from approximately 5800 students in 1980 to the current enrollment of about 11,000. He remembers the college atmosphere of the 80's with emphasis on teacher education and liberal arts majors and some health science majors. He has observed and participated in the metamorphosis of UCA to a university with much stronger science and health science programs and with scholarship and research as criteria for advancement, all of which have contributed to UCA becoming the outstanding university it is today.

As UCA bids farewell in May, Dr. Buchanan shared that in retirement he will enjoy his hobbies such as golfing, reading, bicycling, and perhaps return to his former hobby of calligraphy. At the top of his to-do list: He and his wife plan to travel to Scotland where their daughter (mathematics teacher) and grandson live and also to Houston to visit their son (architect). Dr. Donna Foss, Professor of Mathematics, interviewed Dr. Buchanan for this article.