

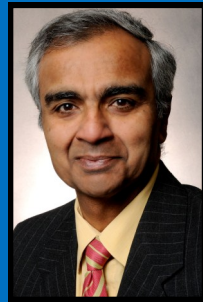
University of  
Arkansas

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From the  
**Department Head**  
Dr. Lalit R. Verma

Spring 2011 started with record enrollments in our classes, challenging us to accommodate students in lectures and multiple lab sections. We have five senior design teams engaged in challenging real-world problems under the guidance of their coordinator Dr. Tom Costello and other faculty mentors. Teams are also preparing for national competitions while completing the projects. Some of our students will participate in study-abroad in Belize. Students also participated in the recent Annual Conference of the Institute of Biological Engineering in Atlanta. Dr. Tom Costello was recognized in January with the John W. White Outstanding Faculty Teaching Award at the UA Division of Agriculture and Bumpers College Awards Ceremony.

Three outstanding alumni were inducted in the Arkansas Academy of Biological and Agricultural Engineering, and one of our alums was honored as a Distinguished Engineering Alumnus by UA College of Engineering. The Biological Engineering Senior Design Expo will be held on May 4 and we invite you to participate in the showcase of our seniors' year-long design efforts. We are pleased to learn of the promotion of Drs. Jin-Woo Kim and Brian Haggard to the rank of "Professor" effective July 1 for their outstanding and sustained contributions. The faculty will be engaged in a retreat on May 16-17 to refine our Biological Engineering curriculum with the impending plans for the start of a separate Biomedical Engineering undergraduate degree program in fall 2012. Dr. Carl Griffis has decided to retire this summer after 43 years of dedicated service to the University of Arkansas and this department. We all wish him and his family the very best.



**Biological Engineering**

*Engineering For Life*

**SUBODH KULKARNI**



Carter Weston, center, displays the plaque he earned at the 60th annual National 4-H Engineering, Science and Leadership Challenge held at Purdue University in Indiana. Weston is from Garland County. To Weston's left is Brian Thompson of Landis+Gyr, an event sponsor. On Weston's right is Randall Reeder, chair of the event's management committee. (University of Arkansas Division of Agriculture photo by Subodh Kulkarni)



Subodh Kulkarni, program associate-machinery, coached Carter Weston, of Royal, a 17-year-old Garland County youth who was placed third in the bicycle event in the bicycle competition of

the 60<sup>th</sup> annual National 4-H Engineering, Science and Leadership Challenge. Carter also received some tips from Sara Waller, Garland County 4-H extension agent. The competitors must demonstrate mastery of their vehicles, including written exams, safety knowledge, parts identification, and skills. Events are timed, and any missteps are penalized. Subodh chaperoned the 4-Hers who performed well at State O-Rama and are eligible for the national competition. The challenge was held Sept. 26-28 at Purdue University in Indiana. Arkansas was able to participate, thanks in part to funding from the 4-H Foundation and First Community Bank, Batesville.

Subodh Kulkarni's last day with the department will be Friday, April, 29th. He has accepted a position

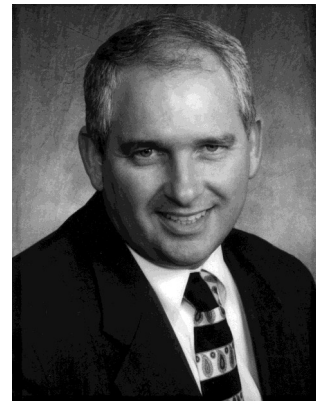
**DR. COSTELLO WINS OUTSTANDING TEACHING AWARD**



Tom Costello, professor in Biological and Agricultural Engineering department, was awarded the John W. White Outstanding Teaching Award for 2010. He was presented with the award on January 7th, 2011 at the Division of Agricultural Awards Luncheon.

Dr. Costello is a leader of the senior design capstone experience in Biological Engineering, which includes hands-on prototyping, mentoring, working with real clients and outreach to meet community needs. His students have won numerous national design competitions. He plays a lead role in curriculum development, including help in organizing retreats and workshops. He acquired a grant to support senior design projects as part of the Arkansas AgrAbility Project and additional gifts to support student projects. He participated in a program with the NASA Advanced Life Support group, which led to his development of a sophomore course in which students produced a working system to grow food plants in a space environment. He has a doctorate from Louisiana State University and B.S. and M.S. degrees in agricultural engineering from the University of Missouri.

**RICHARD ROREX RECEIVES DISTINGUISHED ALUMNI AWARD**



Richard M. Rorex received the College of Engineering Distinguished Alumni Award Saturday, April 16th at the College of Engineering Alumni

Awards Banquet in Fayetteville. The award honors the exceptional, professional and personal achievements of University of Arkansas College of Engineering graduates.

Rorex received his bachelor's degree in agricultural engineering from the University of Arkansas in 1981. After graduating, he was hired by Riceland Foods, Inc. as a plant engineer, and over the next two decades, he was steadily promoted through that company. Currently, he is the vice president of rice milling and engineering at Riceland, where he is responsible for milling and shipping at all four of their locations.

Rorex is a Registered Professional Engineer, and a member of the American Society of Agricultural and Biological Engineers and the National Society of Professional Engineers. He is a member of the Arkansas Academy of Biological and Agricultural Engineering. In 1990, he was named Outstanding Young Agricultural Engineer by the Arkansas Section of the American Society of Agricultural Engineers.

## DR. CARL GRFFIS WILL RETIRE AFTER 43 YEARS OF DEDICATED SERVICE.

Dr. Carl Griffis' Thoughts on Retirement:

I joined the faculty of the University of Arkansas in the Fall of 1968, as an Assistant Professor in Chemical Engineering. I knew at the time that it was only a temporary position, since I had received my PhD in Engineering in that department, and they had a policy of not hiring their own graduates. They needed someone in that position, however, while they sought a more permanent faculty member.



So, I enjoyed teaching process control principles to some very bright students, while arranging visits to other universities that had positions open in their Chemical Engineering Departments. Later, a friend of mine, James A. Ferguson, told me that there was a Research Associate Position open in the Agricultural Engineering Department here at the University of Arkansas, where he

was in a faculty position. This was almost two years after I had begun my tenure in Chemical Engineering, so it was time to look for another spot. Again, I was thinking it would be temporary, while I looked for a more permanent faculty position. So, I joined Agricultural Engineering in 1970.

I got to know Professor Billy B. Bryan (the Department Head), Dr. Thomas Rokeby, Professor Ed Matthews, Professor Glenn Nelson, Professor Warren Harris, and Professor Russell Benedict. They, and, of course, Professor Jim Ferguson, were such a great group to work with. In addition, I found that there were many opportunities for interesting research in Agricultural Engineering.

The tragic and untimely death of Russ Benedict, in the middle of a semester, meant that Billy had to find someone to teach the class that Russ had been teaching. Since the class involved electronic instrumentation, Billy asked me to teach it, and offered me the position of Assistant Professor. Thus, in 1972, I stopped thinking of my place in the Agricultural Engineering Department as temporary.

I continued teaching and doing research in the department, becoming an Associate Professor in 1975, and a Professor in 1983. My brief forays into administration (as Department Head) certainly gave me increased respect for the challenges administrators face.

The department has always attracted some of the very brightest students on campus. The opportunity to interact with these students and with the faculty and our always superb staff has made the job so rewarding and satisfying, that I have never wanted to be anywhere else. On the other hand, the changes that have taken place over the years are amazing. I never would have dreamed that I would someday have young colleagues who knew how to manipulate biological systems at the atomic and molecular levels.

My almost 43 years with the University of Arkansas, the College of Agriculture, the Division of Agriculture, the College of Engineering, and the Agricultural Engineering/Biological and Agricultural Engineering Department have been part of the best career I could ever have dreamed about.



## 2011 ACADEMY INDUCTEES

INDUCTEES—Gregory Baltz of Pocohontas, Earl Vories of Portageville, MO, and Dawn K. Wheeler-Redfearn of Texarkana were inducted into the Arkansas Academy of Biological and Agricultural Engineering during a ceremony on April 15th, 2011, in Fayetteville.



Baltz received his B.S. degree in Agricultural Engineering in 1980. He is a managing partner of Running Lake Farms, a 4,500 acre rice, corn, soybean and wheat farm in Randolph County Arkansas. Integration of innovative technologies has allowed the business to gain efficiencies and achieve long term conservation practices.



Vories, B.S. '81, M.S. '62, is the leading scientist at the Portageville work site of the USDA-Agricultural Research Service Cropping Systems and Water Quality Research Unit in Columbia, MO. He leads a team of scientists working to develop solutions to broad water management problems with application to humid and semi humid areas in the USA and the world.



Wheeler-Redfearn, B.S. '99, MBA '00, works for the International Paper Company in Texarkana. She began as a Process/Project Engineer doing production, maintenance support, process optimization and data analysis for capital projects. As of January 2011, she became the New Products Development and Trial Coordinator.



From left to right: Dennis Carmen, Lalit Verma, and Dawn K. Wheeler-Redfearn



Earl Vories accepting plaque



Greg Baltz accepting plaque

NEW FACULTY & STAFF



Bill Speer, new staff  
Program Associate



Rusty Bautista, new staff  
Program Associate



Will Nash, new staff  
Administrative Specialist III, 575-2352

**FORMER BIOLOGICAL ENGINEERING GRADUATE PROMOTES MS AWARENESS**

Former Biological Engineering Graduate, Jacob Irwin, will ride for the 3rd year in the Bike MS Tour de Vine in Charlottesville, Virginia in order to raise support for the National Multiple Sclerosis Society. The tour is 150 miles and will be on June 11-12, 2011.

Multiple sclerosis (MS) usually strikes adults between the ages of 15 and 50. It is a chronic disease of the central nervous system that impairs the ability of nerve cells in the brain and spinal cord to communicate with each other, prohibiting proper movement of the body. It is estimated that one new case of MS is diagnosed every hour. MS is devastating because it is so unpredictable, and the progress, severity, and specific symptoms of the disease often cannot be foreseen.

After moving back to Charlottesville in August of 2010, Jacob has enjoyed being involved in the Multiple Sclerosis treatment community. He attended the

dedication ceremony of the James Q. Miller MS Clinic, which is one of the most comprehensive MS care clinics within a 4 state radius.



Jacob's bike team, The Grateful Tread

With this being his 3rd year to ride the tour, he is challenging himself and the community by raising his fundraising goal to 5 times what it was last year. The National Multiple Sclerosis Society will use funds collected from the tour to not only support research for a cure tomorrow, but also to provide programs

which address the needs of people living with MS today.

After graduating from the University of Arkansas, Jacob worked for Merck & Co. Inc. from 2008 to July of 2010 and is currently pursuing a Ph.D. in Chemical Engineering at the University of Virginia in Charlottesville.

If you would like to make a donation to Jacob's bike tour, please follow the link:

[http://main.nationalmssociety.org/site/TR?px=6082383&fr\\_id=16582&pg=personal](http://main.nationalmssociety.org/site/TR?px=6082383&fr_id=16582&pg=personal)



Jacob and his mother

**GRADUATE STUDENT AWARDS**

- Naresh Pai, Ph.D. student and graduate research assistant in the Biological and Agricultural Engineering department, was awarded the 2010 Francis E. "Gene" Lortz Memorial Scholarship Award by the American Society for Photogrammetry and Remote Sensing (ASPRS) Central Region. The award was given in recognition of Naresh's academic, research, service and related scholarly achievements among a great number of graduate student applicants from States such as Arkansas, Kansas, Missouri, and Oklahoma, that comprises ASPRS Central Region.
- Kate Herzog, accepted into the department Spring of 2011, was awarded a Doctoral Academy Fellowship in January. She received her BS degree from Kansas State and is pursuing her PhD under Dr. Marty Matlock.
- Mahmoud Sharara was awarded the DAF last Fall semester when he started his PhD with Dr. Samy Sadaka. He earned his undergrad degree at Alexandria University in Egypt and his Master's degree here at the University of Arkansas.
- Ching-Shuan Lau won 1st place for Engineering at the 4th annual "From Abstract to Contract: Graduate Student Research Symposium." Mr. Lau was also selected by the Department of Biological and Agricultural Engineering as its Outstanding Ph.D. Graduate Student. He will be recognized during the Honors and Awards Banquet on April 21.

SENIOR DESIGN PROJECTS

“Design of a Portable Swimming Pool Lift for Special Olympics”

Evan Childress, Breandan Kelly, Casey Vickerson, and Kaitlyn Terrell.



This team is working with Special Olympics of Arkansas,

SOAR, to design a transportable swimming pool lift that they will be able to use during their competitions. Currently, many of the facilities where Special Olympics competitions are held do not have a safe means of transporting wheelchair bound competitors into and out of the pool. Their goal is to design and construct a portable pool lift that operates using water hydraulics and safely accommodates a 350 pound individual.

“Design of a Flash Flood Warning System for Campgrounds”



Zach Callaway, Danielle Frechette, and Clark Trapp

In order to prevent flash flood tragedies from occurring, this team performed a risk analysis to identify major hazards, developed a risk management plan and designed a flash flood warning system for a selected campground at a state park in Arkansas. The methodology can be extended to other campgrounds. A complete list of parts for the warning system will be available so that this warning

system can be easily reproduced at a low cost at any site. Their design deals with informing people about a possible hazardous event and fast-moving disaster and then goes on to warn people of this event when it does occur, allowing people to safely evacuate the area in a timely manner. With the successful installation of this warning system, many campers could be saved from tragedy.

“Design of Assistive Technology to Help a Disabled Cattle Farmer”



Debby Chou, Nathan Holeman, Haley Malle, and Jeff Welch

AgrAbility is a program sponsored by the U.S. Department of Agriculture that is dedicated to improving the quality of life of agricultural workers with disabilities. This teams’ client is Mr. Jerry Gill, an Alma farmer that works 3000 acres of hay, cattle, soybeans, and corn. Most of his difficulties working on his farm stem from a shattered vertebra (his L3 and L4 vertebrae are now fused) from a four wheeler accident he had approximately six years ago. To aid Mr. Gill in his efforts to continue working on his farm, they have designed a bump gate so he no longer has to get out of his vehicle to open and close gates, redesigned his tractor seat to allow him to work more comfortably, and designed a new tractor ladder to reduce the chance of a fall when he exits the tractor.

“Design of a Dissolved Air Flotation System for Algae Removal”

Alvaro Claire, Caroline Powell, Katy Rutledge, and William Scott

The team has designed a Dissolved Air Flotation System in order to remove algae from ponds. The removal of algae will increase overall aesthetics, and also improve the ecosystem of the waterbody. In the proposed design, supersaturated air will be injected into a treatment tank containing algae-rich water, and the micro bubbles that come out of solution will cause the suspended algae cells to flocculate at the surface of the container. The algae will then be removed by a skimmer, and the clean water will be returned to the pond.

“Design of a Low Cost Prosthetic Foot for Developing Countries”



Nick Blazic, Joseph Chidiac, Yamama Hafeez, and Jacob Taylor

Inhabitants of developing countries suffer from amputations arising from tragic accidents or illnesses at relatively high rates. The loss of a leg can have catastrophic effects on a person’s life in an economy where most occupations require physical labor. Three previous senior design teams worked on developing a novel prosthetic foot. Accomplishments include prototypes developed using materials available locally in the Dominican Republic, standard strength analysis using ISO standards and various analytical tools. While the 2010-2011 prototype follows analytical precedents set by the previous teams, this design team is building on their foundation and bringing about an optimized prototype that meets project design constraints and objectives.