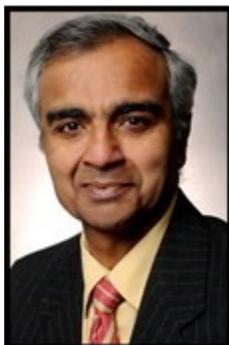


# BAEG LIFE LINE

Fall 2019



## From the Department Head

As we close out the year I wish you a very happy holiday season and the best in the next decade. The fall semester is almost over and we will have eight graduates completing their undergraduate Biological Engineering degrees on December 21<sup>st</sup> at the fall commencement. We began the semester with a welcome picnic for our students in September, which was well attended by students, faculty and staff.

The industry tour for 34 undergraduates in conjunction with the Arkansas Section meeting of the American Society of Agricultural and Biological Engineers (ASABE) in Jonesboro, Arkansas was a success due mainly to the careful planning and organization by Dr. Tom Costello. The tour included Post cereal, Frito Lay's in Jonesboro, rice and peanut farming operations of one of our alums, Mr. Gregory Baltz in Pocahontas, Arkansas, and Fourche Creek Wastewater Treatment Facility in Little Rock. Drs. Costello, Scott Osborn and Kieu Le joined the students on this bus tour.

The external departmental review of our research, extension and graduate education programs was successfully conducted during September 29 to October 3. Our enrollment is continuing steady growth with 127 undergraduate Biological Engineering students with sophomore, junior or senior standings, and 19 graduate students. One of our senior design teams composed of Kristen Connelly, Lillie Haddock, Mary Lawson and Trent Woessner and mentored by Dr. Benjamin Runkle won 2<sup>nd</sup> place at the Gunlogson Design Competition at the 2019 Annual International Meeting of the American Society of Agricultural and Biological Engineers (ASABE) in Boston in July. Several of our faculty participated at this Annual International Meeting. The Arkansas Section of ASABE held its 56th meeting on October 4th in Jonesboro at the Arkansas State University campus. Ms. Libby Topping was named the "Outstanding Senior" and Dr. Tom Costello was recognized as the "Outstanding Engineer" at this event.

We are delighted that the *Carl Griffis Memorial Scholarship* has reached the endowment level and we are most grateful to all who have contributed. U.S. Representative Bruce Westerman of Hot Springs, Arkansas, an alumnus of our department, met on campus with our faculty, staff, students and members of the Arkansas Academy of Biological and Agricultural Engineering (<https://academy-bio-ag-engineering.uark.edu/>) on November 1 and shared his perspective on engaging more engineering professionals to serve in Congress. Continued support from our alumni and friends for our scholarships and programs is needed and greatly appreciated. I would welcome an opportunity to provide additional information about our programs, personnel and department. Please do not hesitate to call (479-575-2351), e-mail [lverma@uark.edu](mailto:lverma@uark.edu) or visit us on campus.

Lalit R. Verma, P.E.

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# Significant Faculty Accomplishments



Dr. Tom Costello was named Arkansas ASABE Engineer Of The Year for his work teaching students about real world applications of Biological Engineering through his industry partnerships in senior design and the annual industry tour that he leads and organizes every year.



Yanbin Li, distinguished professor of biological and agricultural engineering and Tyson Endowed Chair in Biosensing Engineering, earned the 2019 ASABE International Food Engineering award for his outstanding contributions to the development of new biosensing and biomodeling technologies for improving food safety.

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Really tiny things are a big deal to Jin-Woo Kim. For his work in nanotechnology, he has been named the 2019 Arkansas Biosciences Institute Established Investigator of the Year.



Benjamin Runkle, assistant professor of biological engineering, and Chris Isbell, a rice farmer in Humnoke, Arkansas are working together to develop more effective rice production techniques to reduce water use on the Isbell family farm.

Benjamin Runkle, also has been honored for his successful teaching by the American Society for Engineering Education.

Runkle also earned the 2019 Early Achievement in Engineering Education Award from the Biological and Agricultural Engineering Division of ASEE.

# Student Life



A senior design team was awarded second place in the G.B. Gunlogson Environmental Student Design Open Competition at the ASABE Annual International Meeting in Boston. The Biological Engineering student team was comprised of Kristen Connelly, Lillie Haddock, Mary Lawson and Trent Woessner. They were advised by Assistant Professor Benjamin Runkle.

**Project Title:** Design of Low Impact Development Structures for a City Parking Lot Expansion

**Abstract:** A senior design team consisting of four undergraduate Biological Engineering students, mentored by a professor from the University of Arkansas Department of Biological and Agricultural Engineering, designed a Low Impact Development (LID) bio-detention pond to be implemented into the City of Fayetteville, Arkansas Parks and Recreation Department's Master Plan of Gulley Park. Gulley Park is a well-visited 27 acre, multi-use park, located in a residential area. The installation of a bio-detention pond system would effectively reduce the runoff volume, pollutant loads, and incorporate native drought and flood tolerant vegetation in the expanded parking lot.

This project included 1) watershed delineation to determine the applicable contributing drainage area to the stormwater feature, 2) pre and post-development hydrographs of both the contributing drainage area stormwater volume and the adjacent drop basins, 3) a preliminary capital cost analysis incorporating component unit prices for similar LID stormwater projects and 4) a hydraulic grade line calculation to ensure the viability of the bio-detention pond designs.

The final design recommendations to the City of Fayetteville Parks and Recreation Department included a bio-detention pond, two adjacent drop basins, and an underdrain system alongside the southern parking lot expansion at Gulley Park. The bio-detention pond is a hybrid approach consisting of a bioretention cell located within the base of a detention pond, both sized for a 100-yr storm storage volume of 1634 ft<sup>3</sup>. The bioretention cell has total surface area of 941 ft<sup>2</sup>. A 6-inch diameter underdrain pipe was recommended to connect to existing stormwater piping, and a 10-inch diameter outflow pipe was recommended to route water from the drop basins to the central bioretention cell. Native drought and flood tolerant bushes and grasses will be planted at the base of the bioretention cell to improve water quality and promote stormwater runoff infiltration in Gulley Park.

Ms. Libby Topping was named Outstanding Senior for her leadership of the Biological Engineering Student Club and for her excellent work in the classroom. Libby has done a great job organizing events, being proactive at planning and solving problems, and has done a great job involving other students in the work of the club.



Dr. Verma was surprised by two of our alumni. Dr. Chris Long, BS Biological Engineering 2003 (U of A), Ph.D. Biomedical Engineering 2009 (John Hopkins University of School of Medicine) MD, PhD, Biomedical/Medical Engineering 2011 (John Hopkins University of School of Medicine) working at Raleigh Radiology Vascular and interventional Radiologist in Raleigh, North Carolina and Tyler Gipson, 2004 BSE who is working as a Hydrologic Engineer with Southwestern Power Administration Tulsa Oklahoma area.

# Field Industry Tour



Students attending the ASABE meeting in Jonesboro, Arkansas.



Students visiting Post Consumer Brands and Frito Lay.



Touring Greg Baltz Farm.



Touring Fourche Creek Waste Water Treatment Plant.

# 2019 Fall Graduates



Jacob Duke Askey  
Jordan Michael Fisher  
Andrew Jewell  
Priscila Morales  
Zachary Morgan  
Connor Smalling  
His-Cheng Su  
Wesley Robert Wahls

# Scholarship Recipients



## **Arkansas Academy of Agri & Biological Engineering**

Cady Puckett  
Tatiana Castillo

## **Biological and Agricultural Engineering General Scholarship**

Clare Yurchak  
Wesley Jones

## **Billy Bryan Scholarship**

Isabel Arrocha  
Lillian Glaeser

## **Xzin McNeal Kendrick Hardaway Scholarship**

Kaden Belcher  
Daisy Mota  
Jake Krier  
McKenzie Gillit  
Amanda Bogart  
Megan Doty  
Haley Ellis  
Tatiana Castillo  
Hannah Vickmark  
Harrison Davis  
Alexie Pope  
Charles Whitten

## **John W. and Tryanny Odom White Scholarship**

Amanda Bogart

## **Division of Agriculture Scholarship**

Kanaan Hardaway  
Evan Byrd

## **J.A. Riggs Tractor Company Scholarship**

Anthony Siebenmorgen  
Isaac Bertels

# Scholarship Donation Opportunities

Please accept my contribution to the following scholarship(s). My check for  
\$ \_\_\_\_\_ is enclosed.

**Billy Bryan** Scholarship Fund \_\_\_\_\_

**Joel T. Walker** Memorial Scholarship Fund \_\_\_\_\_

**Carl L. Griffis** Memorial Scholarship Fund \_\_\_\_\_

Biological and Agricultural Engineering **General** Scholarship Fund \_\_\_\_\_

Biological and Agricultural Engineering **Student Support** Fund \_\_\_\_\_

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

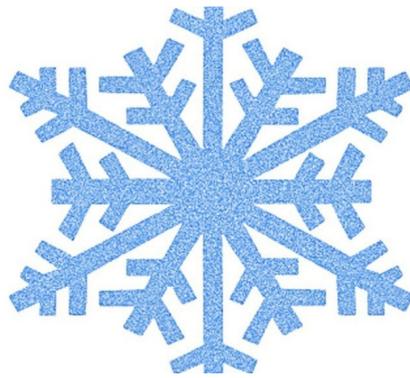
CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

PHONE: \_\_\_\_\_ E-MAIL ADDRESS: \_\_\_\_\_

Remit Payment To: *Dept. of Biological & Agricultural Engineering*  
*203 Engineering Hall*  
*University of Arkansas*  
*Fayetteville, AR 72701*

Or online at: <https://academy-bio-ag-engineering.uark.edu/>

*Enjoy your winter  
break!*



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