

ABEUPDATE

Summer 2018

UF/IFAS Agricultural and Biological Engineering Department

Kati Migliaccio Professor and Chair

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ON THE COVER

Dr. Dorota Haman retired from the ABE department in May 2018 after 33 years. Dr. Haman was the first woman to be hired in the ABE department and strived to advance the department through her leadership and mentorship. Dr. Haman served as Chair of the ABE department for 11 years.

Letter from the Department Chair

Dear ABE friends,

As always, our summer has been busy and productive. We have enjoyed each other's company at the state section and national American Society of Agricultural and Biological Engineers' meetings, watched our robotics team compete (and win!), hosted 4H students, and traveled to places like Kenya and Costa Rica to conduct research.

While our summer activities are drawing to a close, faculty and students continue their work on campus in Gainesville and at Research and Education Centers throughout the state. I had the great pleasure of welcoming a new class of graduate students and a new class of undergraduate students to our department. These students bring a new energy and excitement to our department which help to invigorate our classrooms and research laboratories.

This issue of our newsletter highlights Dr. Dorota Haman, former ABE Chair. Dorota has been a leader, mentor, and friend to many of us over the years. She has left an ABE department filled with exceptional faculty and staff. The highlight article helps convey our appreciation for Dorota's commitment to the department over the years, and the positive impact she made to many. Dr. Rafa Muñoz-Carpena graciously stepped in to continue Dorota's efforts as an Interim Chair over the summer. In this short time, he was successful in shepherding new faculty positions, keeping the day-to-day operations top notch, and facilitating teaching enhancement in the department - all while maintaining an international recognized research program. We are very grateful for his contributions during this transitional time.

As a newly appointed Chair, I recently had the privilege to host our departmental faculty retreat. What a wonderful way to start a new position! During this retreat - faculty identified some of the reasons ABE is such an outstanding department. Examples included "our leadership in new biological engineering concepts and practice", "small classes with student focus", "broad and deep expertise of well-recognized faculty",



Kati Migliaccio, Professor and Chair

"range of research opportunities and collaborators", "career opportunities for students", "diversity of perspectives", and "recognition of the importance of teaching".

The positive energy from new students and that reflected in the faculty retreat create a fresh atmosphere of opportunity to start the fall semester. The new semester brings promise of new research innovations, new friendships, and opportunities for students - current and former to achieve their dreams. as Tom Petty put it:

"Yeah runnin' down a dream That never would come to me Workin' on a mystery, goin' wherever it leads Runnin' down a dream"

So let's get busy runnin' down our dreams! Go Gators!

Kati Migliaccio

Professor and Chair



@hydroKati



n 1985, Dr. Dorota Haman, Emeritus Faculty and former Chair, was hired as the first woman engineer in the ABE department. During her 33 years at UF, she positively impacted many career paths.

While moving through the ranks from assistant professor to chair, in addition to her highly productive research, teaching and Extension programs, Dr. Haman valued mentoring young students, graduate students and faculty members.

She naturally served as a role model and inspiration to young women students showing them not only that a career in engineering and academia was possible for women but that they could be equally competitive in research, grants, Extension, teaching and leadership.

Dr. Stephanie Burrs, Assistant Professor at Prairie View A&M University, remembers many conversations with Dr. Haman:

"I have many memories of sitting in Dr. Haman's office seeking advice. She always made herself available and she listened patiently while I vented about whatever problem I was having. Yet, she always ended the conversation with very clear, direct and easy to follow instructions. She would tell me to get out there and overcome any challenge in front of me. She reminded me to be clear in my thinking and focused on my goals. This advice continues to guide me even today. Her support of all students in the ABE department was always undeniable. Her support of the numerous female graduate students in the department allowed us to enjoy a very rich support group. This large

group of female graduate students became an important part of my success."

Dr. Haman also fostered a community within the department where all students could grow and feel part of something bigger than themselves. Her support of the department's graduate student organization (GSO) allowed for students to develop their leadership skills while promoting departmental events.

Dr. Dana Choi, Assistant Professor at Penn State University, commented that Dr. Haman, "endeavored to facilitate an inclusive atmosphere in the department by creating various student activities such as the annual poster symposium and 3-Minute Thesis competition, in which all of the students can share their ideas freely and thrive regardless of gender or race."



The GSO, led by then Ph.D. graduate student and current UF postdoctoral researcher Dr. Geraldine Klarenberg, was encouraged by Dr. Haman to become active at the national level through the industry's professional organization, the American Society for Agricultural and Biological Engineers (ASABE). With Dr. Haman's support, a Member-At-Large position for a graduate student in the Young Professionals Community (YPC) of ASABE was established to ensure ongoing sustainable involvement of graduate students in ASABE.

"Dr. Haman's vision was critical not only for long term impact for graduate students but for me as a woman," Geraldine said. "Her belief in me and my leadership in a national organization has helped move me forward with

confidence. I am still involved with ASABE today as a result of her mentoring and encouragement."

Throughout her career, Dr. Haman received many awards and honors including ASABE Fellow in 2014, Distinguished Leadership Award of Merit from Gamma Sigma Delta in 2012, Distinguished Alumni Award from the Michigan State University Department of Biosystems and Agricultural Engineering in 2010 and Art Hornsby Distinguished Extension Award in 2004.

Dr. Prachee Chaturvedi, Project Lead for Emerging Leaders in Science Program at Monsanto Co. Research and Development, says Dr. Haman, "is a role model for many of us. She touched lives of many students in her 33-year career; she might not remember all of them but all of us will remember her as a great

teacher and mentor throughout our career."

While gender disparity still persists in engineering, the gap is closing and women like Dr. Dorota Haman are making all the difference.

"Mentoring played a pivotal role in my career. A mentor can make a big difference in the life of a student or young faculty. I think that mentoring has been one of the most rewarding parts of my career as a professor and ABE chair," Dr. Haman said.

Though Dr. Haman retired from the ABE department in May 2018, she remains as a collaborator on several research projects.





TOP (p. 4): Dr. Dorota Haman chats with graduate student Thiago Onofre at the 2018 ABE Poster Symposium. LEFT: Dr. Dorota Haman receives recognition as a Fellow in the American Society of Agricultural and Biological Engineers in 2014. RIGHT: Dr. Dorota Haman with Drs. Rafael Muñoz-Carpena and Gregory Kiker in South Africa.



tudents and faculty from ABE, Anthropology, Geography, and Environmental Engineering departments went to Costa Rica this summer to visit the Tempisque-Bebedera watershed and the Palo Verde wetland as part of the UF Water Institute Graduate Fellowships (WIGF) project, "Inducing Resilience for Water-Subsidized Systems."

Though the faculty were only there a few days, the students immersed themselves in the system for more than a month—two trips to Palo Verde National Park, a tour of a coffee co-op, a trip to the cloud forest, a guided hike to see the endangered quetzal, a tour of a fishing village that established community fishing

rights, a visit to the Savegre River (an undammed river), a visit to the Arenal dam, a tour of an hydropower facility, a scenario planning workshop with stakeholders, and classes and group work with UF law students.

The purpose of this trip was to introduce the student cohort to the area of study and participate in the international environmental policy course hosted by UF Law. UF Law has been hosting the environmental law and policy class there for 18 years. On this trip, the class helped the WIGF cohort develop a more thorough understanding of law and policy within Costa Rica's Tempisque-Bebedero basin through group projects and multiple site visits. The cohort also participated

in a scenario planning workshop with stakeholders from the Tempisque-Bebedero basin. Classes were hosted at the Organization for Tropical Studies facility in San Jose, while field trips took the cohort around the country, including to Palo Verde National Park and the Savegre River.

Through this trip, the cohort got to experience the area, interact with stakeholders and learn more about environmental policy and law. Now back in Gainesville and equipped with deeper understanding of the system, the students and faculty are ready to push this transdisciplinary project forward in this coming semester. ■





TOP: Dr. Rachata Muneepeerakul and Kathleen Vazquez sit atop a fangueo, a tractor used to mow over cattails in the Palo Verde wetlands. RIGHT: Dr. Rachata Muneepeerakul assists in changing a fangueo wheel.





WELCOME, DR. HAIMANOTE BAYABIL

The ABE department welcomes new faculty member Dr. Haimanote Bayabil. Dr. Bayabil is an Assistant Professor of Water Resources. He conducts his research and extension program at the Tropical Research and Education Center (TREC) in Homestead, Florida. Dr. Bayabil holds a Ph.D. in Biological and Environmental Engineering from Cornell University with specialization in hydrology and soil and water management.

His previous research has focused on topics that include irrigation scheduling; hydrologic and water quality modeling; field monitoring and modeling of hillslope runoff and erosion processes, and soil moisture dynamics; evaluating and developing of best land and water management practices; climate change impact modeling; and greenhouse gas flux monitoring.

Dr. Bayabil's research and extension program at UF/
IFAS TREC primarily focuses on developing practical and
sustainable water management practices that conserve
water and improve water quality in agricultural and urban
areas with emphasis on improving water productivity of
the agricultural sector, the largest consumer of freshwater,
while at the same time enhancing crop productivity, water
quality, and ecosystem services.



USDA CENTER FOR EXCELLENCE

Associate Professor Dr. Eric McLamore will lead the newly formed Center for Excellence. This center was created using a \$5 million, five-year U.S. Department of Agriculture grant as part of the water for food program.

Support from the grant will allow researchers from the universities to develop SmartPath, a new technology to help farmers use less fresh water by using smart sensor/treatment systems to utilize alternative irrigation water sources.

This project will link treatment and sensing systems to measure aspects such as temperature, pH, salinity, dissolved oxygen, nitrate, phosphate and dangerous bacteria from fecal contamination. This technology will allow growers to receive rapid feedback from decision-support systems using the "Internet of Things, which is a system of wireless devices communicating in real time with growers.

Researchers will be focusing initially on varying drought conditions in the U.S. within four states, including Florida, Texas, Iowa and Maryland, and will investigate use of three alternative water sources: treated domestic wastewater, brackish groundwater and surface water that does not meet regulatory requirements.

In this project, which started in August, UF/IFAS researchers will work with scientists from various institutions including Texas A&M University, Iowa State University, the University of Maryland-Eastern Shore and the University of Wisconsin.



F/IFAS Florida 4-H University participants spent two days visiting the ABE department for workshop sessions to learn more about the agricultural and biological engineering industry, the ABE department at the University of Florida and what they could potentially do within this industry in the future.

Florida 4-H University is a week-long event for young adults, age 14-18, held at UF. At this event, attendees have the opportunity to participate in faculty-led educational workshops, explore career opportunities, lead community service activities and interact with youth from all over the state.

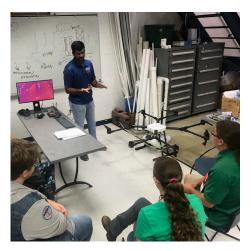
ABE Associate Professor Dr. Zhaohui Tong, along with Associate Professor Dr. Eric McLamore and Assistant Professor Dr. Yiannis Ampatzidis, organized the "Biotechnology and Smart Agriculture"

workshop with the goal to introduce basic biological engineering concept to students using hand-on activities and demonstrations.

Divided into two sessions, this workshop introduced the participants to various engineering concepts currently in use: 1) biosensor and biomaterial session and 2) smart agriculture and sustainable water session.







LEFT: Dr. Eric McLamore discusses creating color changing biosensor beads made out of cabbage. CENTER: Students create color changing biosensor beads from cabbage in the biosensor and biomaterials workshop session. RIGHT: Sri Kakarla from the Southwest Florida Research and Education Center presents advances in precision agriculture and discusses weed detection.



The biosensor and biomaterial session included hands-on activities discussing and demonstrating nanomaterials, polymers, biosensors, cabbage biosensors, and nanoraspberry solar cell. The smart agriculture and sustainable water session included water exhibition project, precision agriculture and robotics for weed detection.

Dr. McLamore led an activity on creating cabbage biosensors during the biosensor and biomaterial session.

"Our part of this is focused on biosensor technologies that can be prepared with household kitchen materials," said Dr. McLamore. "The youth prepare color changing beads using simple materials with no prep on our part. We carefully select materials that do not require heat or any chemical preparation, and they are all food grade (even edible). So the kids really make and play with the materials and can repeat at home regardless of age."

The goal of this workshop, specifically made for young adults of high school age, is to give them new insights on what they could do in this field of engineering.

"At the age of 14 to 18, students need to determine what is their future interest for what his or her college study will be. This workshop provides them the firstshot of memory about what biological engineering is," Dr. Tong said. ■

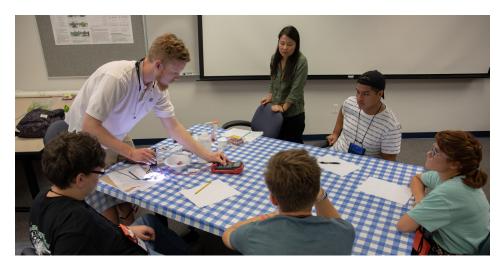
Fric McLamore, @NanoBio_Sensors



Dr. Zhaohui Tong welcomes the 4-H workshop participants and introduces the ABE department at UF and the topics that are covered in this workshop.



4-H-ers work to build a hydrological model while learning about irrigation in the smart agriculture and sustainable water workshop session.



Dr. Zhaohui Tong and ABE student John Nemenyi show participants how to create a raspberry solar cell in the biosensor and biomaterials workshop session.

ABEUPDATE



ABE GOES TO GERMANY

The UF in Osnabrück study abroad group traveled to Germany this summer to learn about engineering technologies and to further understand sustainability in engineering and planning. They also competed in a design/build class with amphibious vehicles using some 3D printed components or created virtual reality environments

This study abroad is a 6-week program with the University of Applied Sciences in Osnabrück, Germany. Biological engineering student Erin Guby, along with 12 students on this trip from various fields of engineering, including mechanical engineering, industrial and systems engineering, civil engineering, chemical engineering and computer engineering, participated in this unique opportunity. Along with the design/build class, students also took a course designed to provide them with five topics related to innovations in engineering and planning with associated visits to industry. They received information on topics in energy, mobility, iron and steel production, agricultural innovations, and polymer science. Several of the topics included laboratories and visits to industry.

Beyond the classroom, students experienced cultural aspects of Germany though trips to Berlin, the North Sea, Cologne, and Bonn. Over extended weekends, the students also arranged their own travel to nearby nature parks. A few even traveled to Amsterdam to experience that historic Dutch city.

ABE's Dr. **James Leary** also traveled to Germany to assist with this program. Dr. Leary has been involved with this program since 2006. ■



TENURE AND PROMOTIONS

ABE is proud to congratulate its faculty members on their tenure and promotions. Dr. Nikolay Bliznyuk has been awarded tenure and promoted to Associate Professor, Dr. Clyde Fraisse has been promoted to Professor, Dr. Jasmeet Judge has been promoted to Professor and Dr. Greg Kiker has been promoted to Professor.

Dr. Nikolay Bliznyuk has been at UF since 2011 and specializes in Bayesian statistics, computational statistics, design of computer experiments, engineering applications of statistics, environmental statistics, high-dimensional data modeling, inverse problems, Monte Carlo methods, semiparametric statistics, spatial statistics and spatiotemporal modeling.

Dr. Clyde Fraisse has been at UF since 2003 and specializes in agrometeorology and agroclimatology, crop response modeling and decision support systems.

Dr. Jasmeet Judge has been at UF since 2001 and specializes in microwave remote sensing; electromagnetics; radiative transfer theory; modeling of land surface processes and biogeochemical cycles for different terrain-type; surface and subsurface hydrology; soil physics and transport mechanisms; linkages between water, carbon, and nitrogen cycle; and micro-meteorology.

Dr. Greg Kiker has been at UF since 2005 and specializes in computer simulation of water, plant, and animal ecosystems; object-oriented design and code development; agent-based modeling of coupled human-natural systems; multi-criteria decision and risk analysis; teaching and analysis of complex systems, environmental decision-making; and online education.



The Center for Remote Sensing in the UF/IFAS ABE department hosted a two-week intensive course in Remote Sensing and GIS in Hydrology this summer for delegates from Taiwan to teach state-of-the art remote sensing techniques for agricultural applications and discuss their applicability to water resource management in Taiwan.

The intensive course is offered as part of the Endowment Agreement between the UF/IFAS and the International Commission on Irrigation and Drainage/ Chinese Taipei Committee, Taiwan R.O.C. Taught every summer, this course serves a delegation of eight to fifteen participants from various irrigation associations and water related government agencies in Taiwan. Since

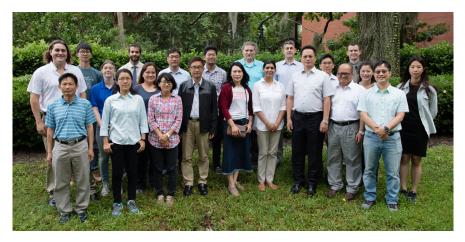
2015, the participants also include undergraduate and graduate students from National Taiwan University (NTU) funded by a donation from Mrs. Wen-Fu Shih to NTU.

Activities involved in this course include lectures, guest-lectures, laboratory demonstrations and field trips. The group travels throughout Florida where they visit Water Management Districts, State Parks, restoration project sites, and UF/IFAS Research and Education Centers for various seminars and site visits.

Participants travel to the U.S. for this continuing education to learn new remote sensing technologies that are being used in the U.S. and how these technologies can be transferred

for use in Taiwan. Many of the early graduates of the course are now in top management with significant decision-making duties and are implementing new technologies. The addition of undergraduate and graduate students from NTU allows for training of next generation of remote sensing scientists in Taiwan.

Dr. Jasmeet Judge leads this intensive course that has been offered for 21 years. Dr. Judge serves as the program director for the UF/IFAS Center for Remote Sensing, which focuses on research and application of remote sensing and related technologies in order to improve agricultural production and conserve natural resources in Florida.





LEFT: From left to right: (First Row) Kuo-Jung Lai, You-Chen Shen, Chun-Chia Liu, (Middle Row) Marc Thomas, Allegra Cohen, I-Hui Chou, Fa-San Wang, Meng-Chen Chen, Jasmeet Judge, Wen-Hao Leu, Chang-Chao Chiang, Yung-Sheng Lin, (Back Row) Clement Tseng, Fernando Aristizabal, Chien-Wen Huang, Tai-Yi Liu, Billy Duckworth, Rafael Muñoz-Carpena, Jiun-Huei Kuo, Daniel Preston, Su-Chen Hsu, Wei-Hsin Tseng.





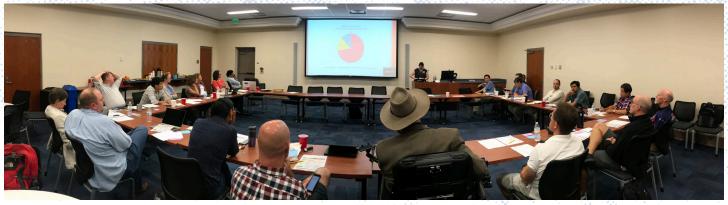












(Top to Bottom, Left to Right) UF ASABE attended the Southeastern Regional ASABE Rally in Lexington, Kentucky. Graduate student Ian Hahus received the Robert E. Stewart Engineering-Humanities Award at the ASABE Annual International Meeting in Detroit, Michigan. The ABE Robotics Team, the RoboGators, placed third in the advanced division in the Robotics Student Design Competition at the ASABE Annual International Meeting. The Irrigation Principles and Practices in Florida course (AOM3734) visited Senninger Irrigation, Inc. to learn about irrigation technologies and products for various applications. The CUAHSI Field Experiences in Microwave Remote Sensing for Agricultural Hydrology group worked in the field to learn about active microwave sensors, soil roughness and analysis, and vegetation geometry and structure. Graduate student Thiago Onofre placed first in the Florida Section ASABE Graduate Student Presentation Competition. A new collaboration space has opened in the AgroClimate Lab in Frazier Roger 256. ABE Faculty came together for the faculty retreat to learn more about one another's work and to brainstorm ideas for the upcoming year.



CONGRATULATIONS TO OUR

GRADUATING STUDENTS

SUMMER 2018



ISAAC DUERR

Doctor of Philosophy Statistics Advisor: Dr. Nikolay Bliznyuk



IAN HAHUS

Doctor of Philosophy Land and Water Resources Advisors: Dr. Kati Migliaccio & Dr. Rafael Muñoz-Carpena



SAMAN SOURI

Doctor of Philosophy Agricultural Machinery Advisor: Dr. John Schueller



SHUNCHANG YANG

Doctor of Philosophy Bioenergy Advisor: Dr. Tom Burks



YINGXIU ZHANG

Doctor of Philosophy Biological Engineering Advisor: Dr. Tom Burks

Eduardo Carrascal, B.S.Biological Engineering

Taylor Chaisson, B.S.Agricultural Operations Management

Bianca D'Silva, B.S.Agricultural Operations Management

Jose David Garcia, B.S.Agricultural Operations Management

Bryan Guitierrez, B.S.Biological Engineering

Robert Landrum, B.S. Biological Engineering

Jordan Rivers, B.S.Agricultural Operations Management

Victoria Steinnecker, B.S.Biological Engineering

Robert (Max) Werling, B.S.
Agricultural Operations Management





- Dr. Michael Dukes and his team received the Blue Ribbon Award at ASABE Annual International Meeting for their "Florida-Friendly Landscape (FFL) Water Savings Impact"
- Dr. Eban Bean and his team for received the UF/IFAS Extension Entrepreneurial Award for their Healthy Ponds Certification Program proposal.
- Professor Emeritus Dr. Fedro Zazueta on receiving the Massey-Ferguson Educational Gold Medal at the 2018 ASABE International Meeting.
- Dr. Aditya Singh received the Florida Section ASABE Outstanding Young Researcher Award.
- Dr. Michael Dukes and his residential water savings program team received the Jim App Award.
- Dr. Ray Bucklin on received the Florida Section Florida Section ASABE Distinguished Achievement Award.
- ABE Affiliate Professor Dr. John K. Schueller received the Kishida International Award at the 2018 ASABE Annual International Meeting.
- ABE Courtesy Professor Dr. Irenilza Nääs received the Henry Giese Structures & Environment Award at the 2018 ASABE Annual International Meeting.
- The ABE Robotics Team, the RoboGators, won third place in the Advanced Division of the ASABE Robotics Competition.

- Graduate student Ian Hahus on received the Robert E. Stewart Engineering-Humanities Award at the 2018 ASABE International Meeting.
- Graduate students Hao Gan and Raminder Kaur received the 2018-19 A.S. Herlong Sr. Scholarship from the UF/IFAS College of Agricultural and Life Sciences.
- Graduate student Miles Medina received the 2018 Sanford N. Young Scholarship from American Water Resources Association, Florida Section.
- Graduate student Thiago Onofre placed first in the Florida Section ASABE Graduate Student Presentation Competition.
- Graduate student Shirin Ghatrehsamani placed in ASABE Oral/Poster Competition at the 2018 ASABE International Meeting.
- Undergraduate student Julianne Chechanover received the Florida Section ASABE Outstanding Student Award.
- Agricultural Operations Management undergraduate students Zachary Bennett, Noah Boldt, William Jameson, Sierra Nunez, Cameron Stake and Andrew Waldo received 2018-19 scholarships from the UF/IFAS College of Agricultural and Life Sciences.
- Biological Engineering undergraduate students Bryce Askey, Lindsey Feikema, Zhonglin Lai, Matthew Mixon and Hannah Pepper received 2018-19 scholarships from the UF/IFAS College of Agricultural and Life Sciences.
- ABE recognized Lisa Collins with the ABE Distinguished Service Award for her exceptional public service.



DEPARTMENTAL NOTES

- Dr. Kati Migliaccio has been named the next chair of the ABE department.
- The ABE department will be soon hiring four new assistant professor faculty members.
- Master's level majors in ABE are now available through the UF/IFAS Agroecology Program.
- Dr. Clyde Fraisse has been promoted to Professor.
- Dr. Jasmeet Judge has been promoted to Professor.
- Dr. Greg Kiker has been promoted to Professor.
- Dr. Nikolay Bliznyuk has been awarded tenure and promoted to Associate Professor.

Welcome to ABF

We are happy to welcome our new staff members to the department:



REBECCA HAGBERG

Rebecca started serving as the Receptionist for ABE in June. As the department receptionist, Rebecca handles domestic travel authorizations and reimbursements, expense reimbursements and room scheduling. Rebecca is originally from Perry, Florida and has lived in Gainesville for the last four years.



JIM STANINFIELD

Jim joined the ABE department at the beginning of July, after 20+ years of analytical chemistry work in the paper industry. Jim has also worked for UF before in the Soil and Water Science department. He will be our lab support contact for lab safety, chemical ordering, and lab procedures.

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