

ABE UPDATE

FALL 2021

A New Wave of Learning

Online Master of Science

Be a Gator, Anywhere

UF IFAS
UNIVERSITY of FLORIDA

AGRICULTURAL
AND BIOLOGICAL
ENGINEERING

Fall 2021

UF/IFAS Agricultural and
Biological Engineering
Department

Kati Migliaccio
Professor and Chair

120 Frazier Rogers Hall
PO Box 110570
Gainesville, FL 32611

352-392-1864

abe.ufl.edu

Editor
McKenzie Wynn

Copy Editors
Dr. Kati Migliaccio
Shannon Noble

Writers
Shannon Noble
McKenzie Wynn

Graphic Designer
McKenzie Wynn

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 /groups/12139978/

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University News
UF rises to No. 5 as one of the nation's top public universities by U.S. News and World Report.

ABE friends,

Another year is in the books! As we say goodbye to 2021, I feel like the year went by in a blur. So much happened this past year, our lives were filled with due dates, activities, meetings, new friends, new accomplishments, and new memories. We have been consumed with life issues that surround us as we embraced exciting opportunities emerging at UF with artificial intelligence, circular food and agricultural systems, and climate change – just to name a few!

I consider how busy everything in my life, and I am sure in yours, was this past year and imagine we all probably need a minute (or two) to stop, breathe, reflect, and cherish some of the moments from 2021.

One reflection I will share is on Dr. Ray Bucklin who passed away October 23, 2021. Ray was known for his vast knowledge of department and discipline history, his calm and kind nature, and his enthusiasm to help students succeed. His presence in ABE is felt by his many contributions and the legacies he has left behind. I remember calling him as a young, assistant professor and asking questions that were always answered with kindness and generosity. It is this spirit and those of his predecessors that I feel in the department. It is this energy that continues in our faculty and students today. I am very thankful for people like Ray who decided to contribute to ABE many years ago and set an example of learning, excellence, and generosity to others for us to follow. I am sure I never told him these things or how much they made a difference, but as I work in Frazier Rogers I'm reminded of his smile and I hear the echo of his voice, and I do my best to follow his giving example.

I'm sure each of you have your own special thoughts or memories from 2021. I encourage you to take a moment and thank those who have contributed in some way to ABE or to your own life; people like Ray, who create such positive impact in our world.

The ABE department will be preparing for our 100-year celebration in 2023. This will include many activities to remember, celebrate, and reflect – considering where the department started, where it is today, and where it will be in the future. I am honored to be part of this department and look forward to the upcoming celebration. I hope you will consider joining us to celebrate 100 years of ABE.

Please enjoy our latest newsletter issue which follows. Thank you for all you have done and all you continue to do to move the ABE mission forward, and thank you to all our predecessors – students, staff, faculty, and (yes) administrators who helped fashion ABE and give it the spirit it has today.

Go Gators!

Kati Migliaccio
Chair and Professor



KATI MIGLIACCIO, PH.D.
CHAIR AND PROFESSOR

@hydroKati

#3

*Graduate Biological/
Agricultural Engineering
Program by U.S. News and
World Report*

#5

*Public University by U.S.
News and World Report*

#12

*Undergraduate Biological/
Agricultural Engineering
Program by U.S. News and
World Report*



ASABE's Newest Fellows

The American Society of Agricultural and Biological Engineers (ASABE) defines a Fellow as “a member of unusual professional distinction, with outstanding and extraordinary qualifications and experience in, or related to, the field of agricultural, food, or biological systems engineering.” This is ASABE’s highest honor. This year UF ABE celebrated **Dr. ‘Wonsuk’ Daniel Lee** and **Dr. Saqib Mukhtar** on becoming the newest fellows of ASABE. Dr. Lee and Dr. Mukhtar were awarded as fellows in 2020 & 2021, respectively. Dr. Daniel Lee is a professor in Machine Vision and Precision Agriculture where his areas of specialization include sensing systems, artificial intelligence, precision

agriculture, farm automation, and agricultural mechanization. Dr. Saqib Mukhtar is a Professor and Associate Dean for Extension, Agriculture and Natural Resources. Dr. Mukhtar provides leadership in the development, implementation, and evaluation of IFAS/Extension’s major initiatives that address critical issues in Florida’s food, agricultural, natural resources, and horticultural production systems.

Other UF ASABE fellows joined Dr. Lee and Dr. Mukhtar as they accepted this high honor.

(LEFT) Dr. Saqib Mukhtar, Lily Mukhtar, Dr. Micahel Dukes, Dr. Kati Migliaccio, Dr. John Schueller, Dr. Daniel Lee, Fedro Zazueta, Dr. Dorota Haman, (FRONT) Dr. Ray Bucklin.

ABE 3Peat



Club of Bologna

Strategies for the Development of Agricultural Mechanisation

Every two years the Club of Bologna, sponsored by FederUnacoma, awards the Pellizzi Prize to the top Ph.D. dissertation in the world in the area of agricultural machinery and mechanization. With many nominations from around the globe, for the last 6 years, since 2016, this prestigious award has been given consecutively to three UF ABE Ph.D. graduates.



In 2016, **Dr. Alireza Pourreza** received the Pellizzi Prize after graduating from UF ABE in 2014. To Dr. Pourreza, it is not surprising that UF ABE has seen this many award recipients, "Dr. Lee is running one of the most successful precision agriculture labs; impactful, innovative research and outstanding delivery. I'm sure there will be more winners from this lab." Dr. Pourreza believes that achieving the Pellizzi Prize has increased his credibility as a researcher and extension specialist. Currently Dr. Alireza Pourreza resides in California where he is an Assistant Professor at UC Davis, Department of Biological and Agricultural Engineering.



Two years later in 2018, **Dr. Dana Choi** was awarded the esteemed Pellizzi Prize soon after graduating from UF ABE in 2017. She says "In my opinion, the goal of a PhD student is to make a contribution to the world through their research and dissertation. I spent 4 years to complete my PhD studies, and receiving this award is a really rewarding experience as a PhD student." Dr. Choi says that receiving this award has opened more career opportunities for her. Currently Dr. Choi is an Assistant Professor in the Department of Agricultural & Biological Engineering at Penn State.

Beginning in January 2022, she will return to UF ABE as an Assistant Professor at GCREC in ABE.



Recently in 2020, 2018 graduate **Dr. Hao Gan** became the third consecutive Pellizzi Prize winner from UF ABE under the guidance of Dr. Daniel Lee. Dr. Gan says "It is a great honor to receive this award

from the Club of Bologna. Knowing that my work has been recognized on such a prominent stage encourages me to make greater contributions to the field of agriculture mechanization and automation." Dr. Gan also says that he feels very lucky to be part of one of the best teams in precision agriculture and to have the best mentors in the world. Dr. Hao Gan is currently an Assistant Professor at the Department of Biosystems Engineering and Soil Science at the University of Tennessee.

The guiding force behind each winner is UF ABE professor and mentor, **Dr. 'Wonsuk' Daniel Lee**. Dr. Lee's efforts to create a collaborative environment have definitely proven to be successful with three, award winning students.

Dr. John K. Schueller, Professor of Mechanical and Aerospace Engineering and Affiliate Professor of UF ABE, says "UF winning the Pellizzi Prize once is an honor that no other USA university has achieved. To win it three consecutive times is truly fantastic."

I feel very grateful to have worked with such excellent Ph.D. students. I am very proud of them, and it is the most rewarding feeling that my students have received 1st place in the prestigious award three times in a row. I don't think I have done anything special, but they have done an excellent job! I want to thank Dr. John Schueller for his strong support for my students.

- Dr. Daniel Lee





Online Non-Thesis Master of Science

The University of Florida Agricultural and Biological Engineering Online Non-Thesis Graduate Program seeks to break digital barriers in an effort to connect everyone with the opportunity to join the Gator Nation, regardless of their location. The non-thesis plan of study includes 30 credits. Students are guided through the program with a faculty advisor and have options to engage with others through various departmental activities. Through this completely online program, students will gain the opportunity to advance their skillset and ultimately earn a degree that will help them reach their professional goals.

The Agricultural and Biological Engineering Department in the College of Agricultural and Life Sciences (CALS) and the Herbert Wertheim College of Engineering (HWCOE) now offers a self-supporting non-thesis MS degree for distance learners. In the CALS non-thesis MS degree, students will learn about food production systems, operations management, and SmartAg technologies. For the HWCOE non-thesis MS degree, students will focus on biological modeling, design and instrumentation, SmartAg engineering, and bioprocessing. Both of the master's specializations will be taught by faculty with a strong expertise in these areas. This program is 100% online and students will receive the same degree as students in the in-resident program.

The Agricultural and Biological Engineering department ranks #3 as the best graduate programs in the nation and UF ABE Online is excited to provide credentials and education to everyone all over the world, allowing students to "Be a Gator Anywhere."

The cost of this online graduate program will vary depending on a student's residency status. For out-of-state, non-resident students, the total cost will be \$16,972.50. For Florida residents, the in-state cost will be \$14,534.40.

The Online Non-Thesis Program focuses on modeling, technology, and artificial intelligence (AI). With the growing interest and need for this knowledge by professionals, this online program gives graduates a significant competitive advantage. With UF being one of the few universities to offer an online master's degree program in agriculture and biological engineering, UF ABE Online is dedicated to making agricultural engineering accessible to all.

To learn more about ABE's Online Master's Program, visit abe.ufl.edu/graduate/online-masters-non-thesis.

Contact **Daphne Flournoy** at dflournoy@ufl.edu for more information about registering.

Be a Gator, Anywhere



Graduate SmartAg Certificate Programs

The Agricultural and Biological Engineering graduate studies program now offers the opportunity for students to earn certificates in two new Graduate SmartAg Certificate Programs: Advanced SmartAg Engineering and Applications in AI-based SmartAg.

Advanced SmartAg Engineering Certificate in HWCOE

The Advance SmartAg Engineering Certificate gives students the opportunity to design, program, and analyze control systems, which can be applied to a broad range of engineering applications relevant to SmartAg systems. This certificate also offers training in various topical areas relevant to modern computation-based innovations in agriculture, termed SmartAg. This program has a tiered course structure that introduces students to concepts of instrumentation, machine learning, and control methods in SmartAg applications.

Applications in AI-Based SmartAg in CALS

The Applications in AI-Based SmartAg Certificate focuses on design, analysis, and evaluation of SmartAg methods for applications in production agriculture, biological and food engineering, forestry, land, and water resources.

Students will learn concepts, principles and applications of technologies supporting precision farming and natural resource data management planning. Students can customize their experience by selecting electives in their area of interest in precision agriculture, remote sensing, GIS, controlled environment, and crop simulation.

#3

Graduate Biological/Agricultural Engineering Program by U.S. News and World Report

For more information about ABE's SmartAg Certificate Programs, visit abe.ufl.edu.

Contact Us

Dr. Adam Watson
Assistant Professor
jaw7385@ufl.edu

Dr. Tom Burks
Professor
tburks@ufl.edu



Undergraduate student Aralyn Nunez speaks at the ABE Career Fair with a representative from Alico Citrus.



Undergraduate students smile for a picture before they begin networking with employers.



Undergraduate student Juan Daniel speaks at the ABE Career Fair with a representative from Kimley Horn.

ABE's Career Fair Debut

This year, the UF Agricultural and Biological Engineering Department partnered with the UF Career Center to host its first collaborative ABE Career Fair.

The collaborative UF ABE Career Fair and UF Career Showcase was a new opportunity for ABE students! In collaboration with the UF Career Connections Center, a separate recruiting fair was specifically designed for UF ABE students. This UF ABE fair was held in conjunction with the UF Career Showcase – the largest career fair on campus. Beginning on November 29th, students participated in the in-person ABE fair and technical day for the Career Showcase at the Stephen C. O'Connell Center. On November 30th, students were able to participate in the ABE Career Fair virtually through the Career Fair+ App. Many employers were invited to both the Career Showcase as well as the ABE Career Fair. The ABE Career Fair was designed for improved access to both the employers and the students. The environment of the ABE Fair fostered a personable interaction between everyone. Hosting this collaborative fair brought awareness of ABE student talent to five new companies—**Avanti Bio, Kimley Horn, ESP Associates, Alico Citrus, and Del Monte**. Returning employers who already seek out ABE students included **Cal Maine, Araozza Brothers, and Costa Farms**. At the end of the day, the ABE Career Fair hosted 172 students and 11 employers and provided networking opportunities for students to find internships, part-time jobs, full-time work, and Co-Op opportunities.

PARTNER WITH US

Are you a company or industry interested in ABE? Visit abe.ufl.edu/partner-with-us to learn more about collaborative projects and student interactions.



Kevin Wang

Assistant Professor

xuwang1@ufl.edu @xukwang

Xu 'Kevin' Wang joined ABE in October 2021. He started as an Assistant Professor at the Gulf Coast Research and Education Center in Wimauma, Florida. Dr. Wang's research focuses on phenomics for plant breeding with artificial intelligence applications; he is also part of the UF AI Initiative. Dr. Wang says that he feels very connected to the ABE department and is excited to investigate more innovative methodologies for phenomics research.

ABE Welcomes New Faculty & Staff



Heather Gavigan

Fiscal Assistant

hgavigan@ufl.edu

Heather Gavigan started as the Fiscal Assistant in November 2021. She has a BA in English from UF and has worked for UF in fiscal/grants related positions for the past few years before joining ABE. She is responsible for approving PCard charges, creating purchase orders and approving invoices in Marketplace. She can also assist faculty and staff with questions about purchasing and payment.



Daphne Flournoy

Academic Advisor

dflournoy@ufl.edu

Daphne Flournoy started as the Academic Advisor in August 2021. She has a BS in Human Resources Management from Santa Fe College and has worked for UF since 2016 in Admissions. She is responsible for undergraduate academic and developmental advising for students in the AOM and Biological Engineering majors, and graduate student advising for the ABE programs in both CALS and Engineering.



McKenzie Wynn

Marketing and Communications Specialist

mwynn3@ufl.edu

McKenzie Wynn started as the Marketing and Communications Specialist in July 2021. She has a BS in Telecommunication Production from UF and is finishing her MA in Mass Communication at UF where she specializes in social media and web design. She is responsible for managing media, communications, and branding efforts for the UF/IFAS Agricultural and Biological Engineering (ABE) department.



Dr. Wendell Porter Retires

After 17 years of working at the University of Florida Agricultural and Biological Engineering Department, Dr. William Porter is retiring. Before Dr. Porter became an influential Agricultural Operations Management (AOM) professor, he first started working with the Florida Energy Extension Service (now known as the Program for Resource Efficient Communities) in 1994. As an engineer, his home department was ABE. In 1999, Associate Professor Emeritus Dr. Byron French convinced Dr. Porter to go back to school to get his PhD, and in 2003 he received that distinction. Then, in 2004 he started working directly in ABE. While Dr. Porter has taught a majority of the AOM courses over the years, his main areas of teaching are related to construction and energy. Dr. Porter says that at ABE, the people are what make his job enjoyable, “I’m the first generation off the farm in both sides of my family, so it really felt like coming home working at ABE. Like a family, great people over the years.”

When asked about his favorite memory of working at ABE, Dr. Porter says, “Early on working with Jim Leary and a great technician, Mike Annucci. I Learned a lot and laughed so hard at some of the situations we got ourselves into and out of. Many of these stories will not be revealed. Seeing some of the real challenged students find a direction, shine and graduate. These are the best memories. Also seeing the best students graduate and see their careers go off like a rocket.”

As far as how Dr. Porter plans to enjoy retirement, he says, “Who knows. I have several local nonprofits that would like to claim me and our kids are thousands of miles away. I have no set plans at this stage.”

Dr. Porter is remembered by his students because of his impact in the classroom. Former student and AOM Alumni, Drew Scatizzi, says “Dr. Porter was a seminal influence on my education and career, and many other ABE graduates. I owe a great deal of my success to him; I wouldn’t be here today without his support and mentorship.”

Many alumni hope to uphold Dr. Porter’s significance in the department through the new AOM Teaching Building. For decades he has taught courses in the old AOM shop, and in honor of his retirement a group of AOM alumni are pursuing a naming opportunity for Dr. Porter in the new building to carry his legacy forward.

Thank you Dr. Wendell Porter for the impact you have made on students and on the UF ABE department. You have played an instrumental role in the AOM undergraduate program through your many years of teaching and advising. Your dedication to the students and to the mission of ABE have left behind a great legacy that can only be carried forward.

“I wouldn’t be here today without his support and mentorship.”

- Drew Scatizzi

M.S., Agricultural and Biological Engineering, 2017
B.S., Agricultural Operations Management, ABE, 2016



FLORIDA AUTOMATED WEATHER NETWORK

Florida Automated Weather Network (FAWN) is a regional weather network monitoring system with a mission to generate consistent and accurate weather data to ultimately assist in agricultural decision making. Created in 1997, FAWN's goal is to assist growers and researchers in making decisions related primarily to irrigation scheduling and cold protection.

Helping to further this mission is Agricultural and Biological Engineering Assistant Professor, **Dr. Ziwen Yu**. When Dr. Yu joined the University of Florida, his research centered around hydrology and real-time monitoring, ideas that closely aligned with the vision of FAWN.

FAWN consists of 42 stations located across the state of Florida. This is a network that aids growers, farmers, or agriculture researchers who need weather information that is related to agricultural operations. At the time, FAWN did not have complete data quality protocols in place. Due to the location of these stations in rural, agricultural areas in the state, nature would get in the way of consistent data reads.

"If you have a weather station near the field or next to a forest then you have a very high chance of gathering inconsistent data. There is always a possibility of a bird nesting on the weather station or a spider web or cobweb delaying the water going through to the bucket. These are elements that can alter the data that is collected from that weather station."

This led Dr. Yu to join alongside FAWN to help build up quality assurance protocols that will identify these problems and create more accurate data reads. His goal is to create a system where FAWN can identify problems in the data and to create a method in which to distribute this information to the maintenance team and field techs.

Dr. Saquib Mukhtar and **Rick Lusher**, FAWN project manager, also work in collaboration with Dr. Yu to not only ensure that this weather data is accurate but to maximize FAWN's success in making this information accessible.

Being able to identify what is going on in the field will not only help and prepare the maintenance team and field techs to assess the issue but will ultimately ensure that efficient and consistent data is reported, reducing the workload for everyone involved.

Ziwen says "the quality of the data is actually the first thing you have to worry about before you can do any research. That is a key element we are helping FAWN solve; it's important to create a way for FAWN to gather data and report with an indicator of the data quality."

As for the future of FAWN, Dr. Yu hopes to disseminate FAWN's data to other fields and larger audiences. Ultimately this is FAWN's mission, "to leverage timely, reliable, and accurate weather data in support of effective agricultural decision making and stewardship of natural, human, and fiscal resources."

For more information about FAWN please visit
<https://fawn.ifas.ufl.edu>



(Left to Right) Dr. Ziwen Yu, Songzi Wu, and Chi Zhang standing in front of the database of FAWN's system on which the QAQC process is built on.

Semester in Review



(From left to right, top to bottom) ABE Emeritus faculty enjoy the annual Emeritus faculty luncheon. | IFAS Vice President, Scott Angle stops by to meet with the ABE department. | Graduate student Jean Pompeo researches hydroponic lettuce. | The Florida Farm Bureau Board stops by to learn more about ABE research and technology. | ABE hosts the annual Multistate Hatch Project meeting. | ABE faculty, staff, and students enjoy the annual Thanksgiving lunch. | ABE Graduate Student Organization hosts its annual Halloween social with a pumpkin carving contest. | Former ABE Alumni Steven Thomson visits ABE from the USDA, National Institute of Food and Agriculture.

AWARDS AND ACCOMPLISHMENTS

Awards and Accomplishments

- ABE's Graduate Program maintained it's ranking at **No. 3 among best biological / agricultural engineering graduate programs**, according to the 2022 U.S. News & World Report's Best Graduate Schools.
- Professor and Associate Dean for Extension, **Dr. Saqib Mukhtar** was named a fellow of the American Society of Agricultural and Biological Engineers (ASABE).
- **Dr. Daniel Lee** received the CALS Innovation in Teaching Award for 2021.
- **Dr. Young Gu Her** received the 2021 International Educator Award for the College of Agricultural and Life Sciences.
- **Dr. Ziyнет Boz** received the 2021 Global Fellows Award from UF International Center.
- **Dr. Bin Gao** was named a Web of Science Group 2021 Highly Cited Researcher in the Engineering and the Environment and Ecology categories.
- Graduate student **Lory Willard** received the 2021 Research for Doctoral Students Award from University of Florida International Center.
- Graduate student **Patrick Zheng** received the 2021 Florida Stormwater Association Scholarhsip.
- Graduate student **Patrick Zheng** received the 2021 Richard A. Herbert Memorial Scholarships, from National American Water Resource Association (AWRA).
- Graduate student **Taisha Venort** received the 2021 inaugural Corteva Agriscience DELTA grant Award.
- 2021 ABE Three Minute Thesis Results: First place to **Xue Zhou**, second place to **Yicheng Yang**, and third place to **Arianna Partow**.
- Graduate student **Kyle Griffin** received the 2021 ABE Graduate Student Mentoring Award for his incredible service to his peers and to undergraduate students.
- **Dr. Patricia Moreno Cadena** was awarded at ASABE Student Presentation Competition for her poster presentation on "Dry matter dynamics of cassava roots."
- **Dr. Patricia Moreno Cadena** received Third Place in the Graduate Student Poster Competition at the 2021 American Society of Agronomy (Agroclimatology and Agronomic Modeling Community) International Meeting.
- Graduate student **Eduart Murcia Botache** received the ASCE STAR Fund Award. He will use this award to attend the EWRI Congress 2022.
- Undergraduate student **Taylor Hilton** received an HWCOE scholarship for Fall 2021.
- Undergraduate student **Spencer Serrano** received an HWCOE scholarship for Fall 2021.
- Undergraduate student **Lejla Ramic** received an HWCOE scholarship for Fall 2021.
- Undergraduate student **Luke Hatton** received an HWCOE scholarship for Fall 2021.
- Undergraduate student **Alejandro Lovo** received the Giles and Martha Van Duyne Scholarship Fund.
- Undergraduate student **Taylor Hilton** received the Rush E. Choate Scholarship.
- Undergraduate student **Tyler Herrington** received the Sun Fu "Tony" Shih Scholarship.
- Undergraduate student **Joshua Jantz** received the Florida Section ASABE Scholarship Fund.
- Undergraduate student **Chloe Morter** received the Florida Section ASABE Scholarship Fund.
- Undergraduate student **Lejla Ramic** received the John B. Boy/U.S. Sugar in Agricultural Engineering Fund.
- Undergraduate student **Juan Daniel Cornu Sanchez** received the John B. Boy/U.S. Sugar in Agricultural Engineering Fund.
- Undergraduate student **Michelle Ezequelle** received the John B. Boy/U.S. Sugar in Agricultural Engineering Fund.

Doctoral and Master's Degree Graduates



Daniel Perondi

Doctor of Philosophy (Ph.D.)
Agrometeorology
Advisor: Dr. Clyde Fraisse



Patricia Moreno Cadena

Doctor of Philosophy (Ph.D.)
Crop Modeling
Advisor: Dr. Gerrit Hoogenboom



Hunter Smith

Master of Science (M.S.)
Remote Sensing
Advisors: Dr. Aditya Singh



Congmu Zhang

Doctor of Philosophy (Ph.D.)
Crop Modeling
Advisor: Dr. Gerrit Hoogenboom

Bachelor's Degree Graduates

Daniel Arrieta

Bachelor of Science (B.S.)
Biological Engineering

Sophia Meloro

Bachelor of Science (B.S.)
Biological Engineering

Tyler Goertzen

Bachelor of Science (B.S.)
Biological Engineering

Marshall Argenbright

Bachelor of Science (B.S.)
Agricultural Operations
Management

Jeremiah Martinez

Bachelor of Science (B.S.)
Biological Engineering

Robert Proudfoot

Bachelor of Science (B.S.)
Agricultural Operations
Management

Congratulations 2021 Graduates!

**UF/IFAS Agricultural and Biological
Engineering Department**

120 Frazier Rogers Hall
PO Box 110570
Gainesville, FL 32611-0570

352-392-1864
abe.ufl.edu

**GIVING**

Your generous donation to the UF/IFAS Agricultural and Biological Engineering program will provide support for our students, faculty and staff.

To support ABE, our scholarships and more, visit abe.ufl.edu/give.