

BSE NEWS

VIRGINIA TECH DEPARTMENT OF BIOLOGICAL SYSTEMS ENGINEERING

FROM SEITZ HALL

Greetings to all from BSE at Virginia Tech!

This has been a year like no other. After the "on-the-fly" adaptations required to finish the Spring 2020 semester, our students, staff and faculty are completing their second full semester of life and work under the stringent mitigation measures necessitated by the pandemic. Each of our mission areas has been affected by safety requirements: extension, research, and perhaps most visibly, teaching. Supported throughout by a dedicated staff, our faculty met the challenge of providing meaningful instruction in a largely virtual environment. Our students, both undergraduate and graduate, responded in a way that should make us all proud. Despite the many significant challenges, BSE students have maintained a good attitude, given their best efforts, and succeeded in being part of the solution.

As you read through the pages of this newsletter, you're going to see that BSE didn't simply survive the past year; students, staff, and faculty alike accomplished some amazing things. Two of BSE's staff members (**Ling Li** and **Kelly Peeler**) were recognized as the College of Agriculture and Life Sciences Employee of the Month. Two of our graduate students (**Katie Wardinski**, MS student, and **Beth Prior**, Ph.D. student) joined **Daniel Smith** (Ph.D. student) as recipients of the prestigious National Science Foundation Graduate Research Fellowship. One of our faculty members (**Dr. Venkataramana Sridhar**) won a highly competitive Fulbright Fellowship, another (**Dr. Cully Hession**) won the Universities Council on Water Resources' Education and Public Service Award. Several of our faculty competed successfully for external funding that will enable them to expand their research and extension impact, including **Dr. Juhong Chen**, who was awarded \$450K from the US Department of Agriculture for his proposal, "CRISPR-Equipped Engineered Phages." You'll also read about the achievements of several of our undergraduates, and particularly our most recent graduates, whose entire senior year was in a largely virtual instructional mode (to include our capstone course, Comprehensive Design). And there is much, more more to celebrate as described in this newsletter. So, BSE didn't simply survive the year—we excelled and accelerated throughout.

We are happy to have **Chris Colman** join BSE (and the Department of Food Science and Technology) in late April as Building Manager of the Human and Agricultural Biosciences Building 1 (HABB1) after a long search. We are in the final stages of a search for two tenure-track faculty members in the Biotech/Bioprocessing area and hope to announce the new additions in the next newsletter. In the coming year, we're hopeful of adding even more new faculty to build out our capability in the Biotech/Bioprocess specialty and to expand our impacts in the Watershed Science and Engineering area. Finally, we are roughly midway through our departmental strategic planning process. This will be a significant, department-wide effort that will help us to not only improve our internal processes, but also chart a course forward that capitalizes on emerging opportunities and leverages all resources to their maximum extent. I anticipate a major initiative to engage more alumni as part of our students' educational experiences, given the unique value that BSE alumni have already demonstrated in terms of mentorship, job market preparation, and career advice.

We in BSE end the 2020-2021 academic year and begin the next with a sense of optimism and achievement, and I trust that by the time you reach the end of this newsletter, you will share those sentiments. I invite you to follow us on our social media as described later in the newsletter, and that you will feel free to visit us in Blacksburg when conditions and circumstances permit.

Sincerely,
Dwayne R. Edwards, Ph.D., P.E.
Professor and Head
dredwards@vt.edu

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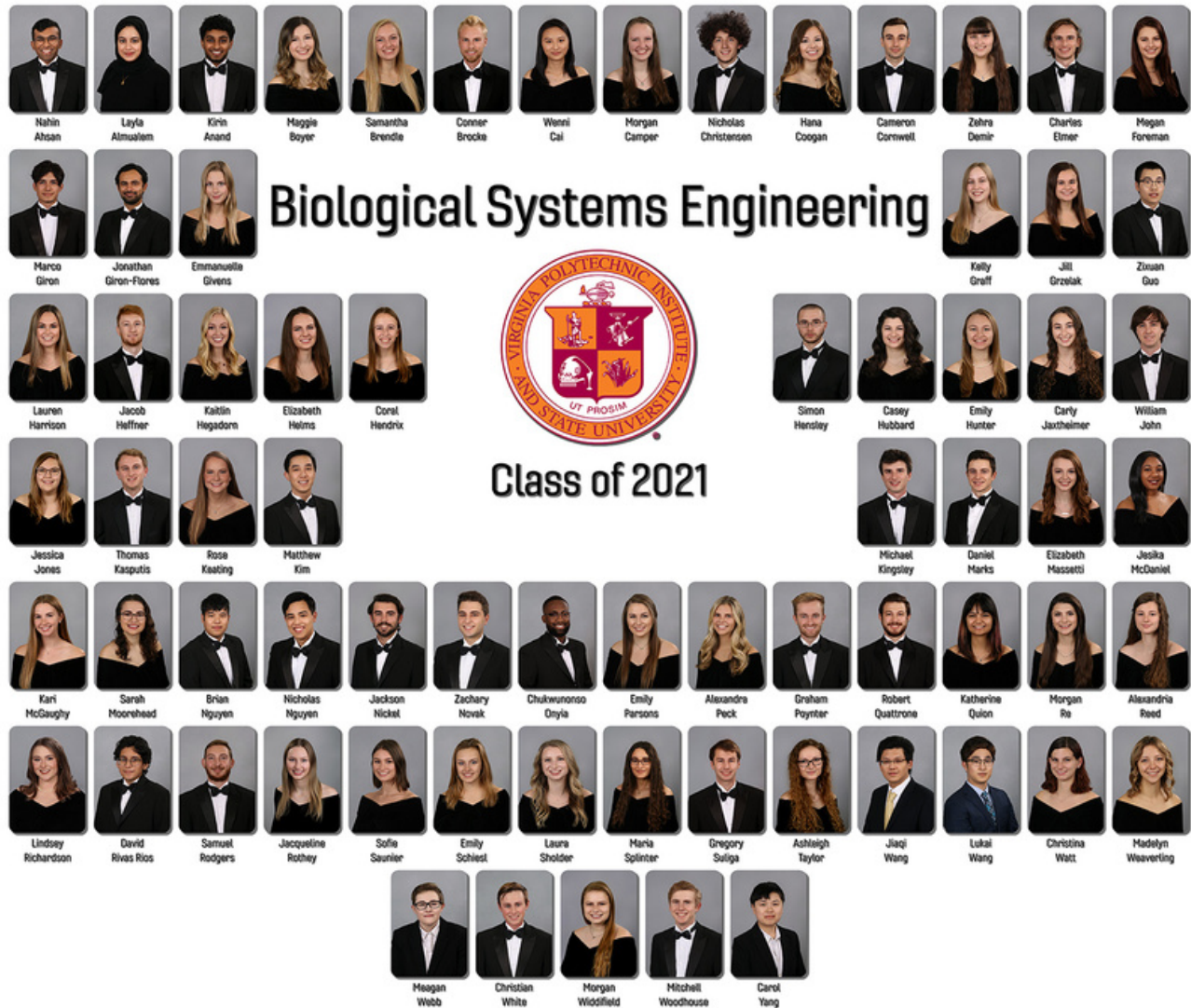
To follow the latest achievements of our students, faculty, and staff and view recent departmental news, visit our website.

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event
information,
student features,
departmental
plans, and more!



BSE STUDENT NEWS



BSE Senior **Alexandra Peck** from Brightwaters, New York focused on our Food Engineering path of coursework while in the department and will be working as a Supply Chain Leader for Frito-Lay in their Lynchburg, Virginia location!



BSE Senior **Elizabeth Helms** from Charlotte, North Carolina focused on our biotechnology path and minored in biomedical engineering. Elizabeth plans to continue our Accelerated Master's Program and go into industry after graduation next spring!



BSE Senior **Emily Parsons** from Chesapeake, Virginia focused on our Biotechnology path of coursework and minored in Biomedical Engineering. She'll be joining Merck as a Process Engineer at their Elkton, Virginia site.



JACKIE ROTHEY

BSE Senior **Jackie Rothey** from Oakton, Virginia focused on our Watershed/Environmental Health path of coursework and minored in Green Engineering! She'll be working on environmental engineering at Kimley-Horn in the hydraulics/hydrology department in Virginia Beach, Virginia!

MORGAN RE

BSE Senior **Morgan Re** presented her research on the Construction and Development of an NFT system for Mushroom Cultivation in Space at Virginia Space Grant Consortium on April 9, 2021!



EMILY HUNTER

BSE Senior **Emily Hunter** from York, Pennsylvania focused on our Food path in our department and will be working as a Research Scientist in the R&D Department for The Hershey Company in Hershey, Pennsylvania!



BSE Senior **Sam Rodgers** (photographed second from the left) presented at Carilion Clinic Research Day on April 9, 2021!

"Presenting to Carilion Clinic, and last month for the Consortium of Universities for Global Health, has provided us with great opportunities to show our research, and we are excited to advance the project in the coming months."

Meet the whole team who worked on the project!
From L to R: **Lauren Harrison**, **Sam Rodgers**, **Austin Allison** (VT BEAM), **Elizabeth Helms**, **Megan Foreman**, & **Lizzy Massetti**.



JILL GRZELAK

Jill Grzelak from Kendall Park, New Jersey focused on our biotechnology track and minored in biomedical engineering. Jill will work as a Process Engineer on the Automation Team for the Manufacturing Division at Merck, at their Durham, North Carolina site.

EMILY SCHIESL

BSE Senior and VT Cross Country runner **Emily Schiesl** from Burke, Virginia focused on our Watershed & Environmental Science path. Emily will be working for the Timmons Group in Ashburn, Virginia after graduation.



ROSE KEATING

BSE Senior **Rose Keating** from Rehoboth, Massachusetts focused on our Biotechnology path and minored in Biomedical Engineering. Rose will be attending Boston University to complete a Master's in Biomedical Engineering.

CHARLES ELMER

BSE Senior **Charles Elmer** from Birmingham, Alabama focused on our Environmental Health path and minored in Urban Forest & Ecological Cities. Charles will be pursuing a MS in Environmental Science from DePaul University.





MADELYN WEAVERLING

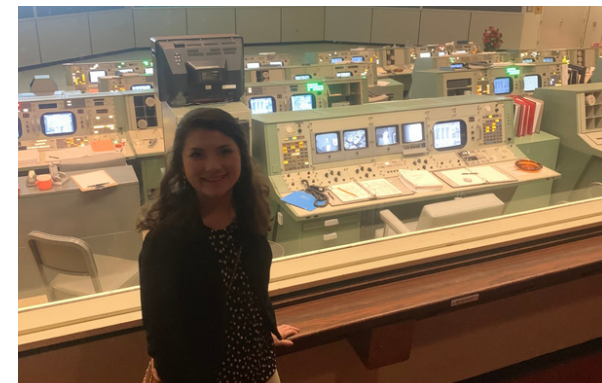
BSE Senior **Madelyn Weaverling** from West Chester, Pennsylvania focused on our environmental health track and minored in green engineering. After graduation, Madelyn will work for Fairfax County Department of Public Works & Environmental Services.

NICHOLAS NGUYEN

BSE Senior **Nicholas Nguyen** from Fairfax, Virginia focused on our biotechnology/premed path and minored in music and biomedical engineering. Nicholas plans to start medical school in late June at the Carle Illinois College of Medicine.

EMMA GIVENS

BSE Senior **Emma Givens** from Westerly, Rhode Island focused on our Biotechnology path and minored in Green Engineering and Interdisciplinary Science and Engineering! Emma plans to work as a Business Analyst with AnaVation LLC in Chantilly, Virginia!.



MORGAN RE

BSE Senior **Morgan Re** from Winchester, Virginia focused on our Watershed path and also majored in Professional & Technical Writing and minored in Geoscience. Morgan has accepted a full-time offer with NASA's Johnson Space Center and she'll complete her MS in BME at NC State.



WEIYUAN JIA

BSE Senior **Weiyuan Jia** from Shanghai, China focused on our Biotechnology path. After graduation, Weiyuan will be attending Duke University to pursue a Master's.



JESIKA MCDANIEL

BSE Senior **Jesika McDaniel** from Greensboro, North Carolina focused on our Environmental Health & Watershed Management Track path. Jesika plans attend Graduate School at Virginia Tech to receive a Masters of Education in Science Education!



RIISING SENIOR BUILDS WEBSITE TO HELP MINORITIES WITH INEQUALITIES DURING COLLEGE APPLICATION PROCESS

Jesika McDaniel always knew she was going to college. She was constantly motivated by her mother, who infused McDaniel with the message that she would do great things in life. She assumed that everyone's parents are like that.

But when she worked with local kids as a teenager at a rec center in her hometown of Greensboro, North Carolina, she found that wasn't always the case. The kids were intelligent but didn't get positive encouragement at home or school, which often resulted in academic struggles. When she worked with them, she noticed that they not only understood what she taught, but that they loved it.

"They started talking about their aspirations and their dreams coming from the Black community," said McDaniel, now a senior in biological systems engineering, which is both in the College of Agriculture and Life Sciences and the College of Engineering. "A lot of parents and a lot of our people don't push college that much unless they have the privilege to be in an education system or a county that encourages our students to go to college, or sometimes even graduate from high school."

Those inequalities inspired McDaniel to change that.

After her summer internship was canceled due to the COVID-19 pandemic, she sat at home and thought about how she could help others. Then the idea came to her: create a website that offers guidance on choosing colleges, helps navigate the application process, and reviews college essays.

Dreams2Degrees was born.

The website is dedicated to providing information for high school and middle school students — especially for minorities, first-generation, and low-income students that want to pursue higher education.

She wants to encourage students during the college application process, something that was missing for McDaniel outside of her immediate family. Her high school counselor advised her against graduating early — something McDaniel did anyway at age 16.

"I want them to know that no matter what, your dream is your journey. You go ahead and do what you need to do. I set up the website to make things look very simple for students — and especially for parents," McDaniel said.

Read the full story in the 2021 Edition of the VT CALS Magazine.



BSE Senior & Ambassador **Kirin Anand** was featured on Blacksburg's local news station (WDBJ 7) for his work with NRV COVID companions.

"It really makes my day when I talk to her and she talks about how just a simple conversation can make her day, and one time she even said it made her week so that was really cool to hear," Kirin Anand, Bertha's companion, said.

"I really think this program is mutually beneficial, which I didn't realize going in. Bertha has helped me so much. She's extremely wise and I've learned a lot from her. She's an awesome person and I've really gotten a lot out of this."

Read the full article and watch the news clip on WDBJ 7's website or on our social media channels.



HANA COOGAN HONORED AS BIOLOGICAL SYSTEMS ENGINEERING'S OUTSTANDING SENIOR

Hana Coogan was recognized as the department's Outstanding Senior. Hana is from Roanoke, Virginia and she focused on the biotechnology and food engineering paths in the department. She served as a BSE Ambassador for two years and is currently the acting president of the Virginia Tech chapter of the American Society of Agricultural and Biological Engineers (ASABE) and an active member of Alpha Epsilon, an honor society for outstanding agricultural, biological, and food engineers.

"I was over the moon when I heard the news," Coogan said. "I was really excited and happy that people within the department felt that I represented what it means to be a BSE student. It made me feel good and the award gave my hard work a little more meaning."

After graduation, she will be working as a full-time process engineer in the U.S. Continuous Improvement Department at The Hershey Company in Hershey, Pennsylvania.

[READ THE FULL STORY](#)

ANNA CHRISTOVICH HONORED AS BIOLOGICAL SYSTEMS ENGINEERING'S OUTSTANDING JUNIOR

Anna Christovich has been on the Dean's List and part of the VT Honors College since 2017. Anna was also the BSE Outstanding Sophomore in 2020 and was a past recipient of the VT Pamplin Leadership Award. She is active as a mentor in both the Society of Women Engineers (SWE) and in the Center for the Enhancement of Engineering Diversity (CEED). She also works as an Our Lady of Hope Nursing Home Aide, providing care for residents in the assisted living group.

She has performed undergraduate research in the Carlier Lab at VT studying the synthesis of anti-malarial drugs and in the Luo Lab studying the role of Vitamin A in Lupus. She also interned at DuPont in their Tyvek(R) Applications Development and Product Research groups in 2019.



STEVEN KENAH HONORED AS BIOLOGICAL SYSTEMS ENGINEERING'S OUTSTANDING SOPHOMORE

Steven Kenah has been on the Dean's List and part of the Honors College since starting at VT. Steven is a member of ASABE, is part of the Theme Park Engineering and Design Club at VT, and participates in outreach programs to high school students. He works in the Plant Synthesis Biolab with Dr. Wright in BSE, where he is working on engineering soybean proteins for numerous applications in industry. He has also interned with Joseph R. Loring Engineers (Princeton, NJ) and in the Department of Civil & Environmental Engineering at Princeton University.





DANIEL SMITH HONORED AS BIOLOGICAL SYSTEMS ENGINEERING'S OUTSTANDING PH.D. STUDENT

Daniel Smith is in his 4th year working with **Dr. Tess Thompson** conducting research related to understanding the physical and biological role of plant roots in fluvial streambank erosion Resistance. He was awarded a prestigious NSF Graduate Research Fellowship in 2019 and he's a Graduate Fellow in the Virginia Tech Interfaces of Global Change Interdisciplinary Graduate Education Program (IGC-IGEP) He has received Cunningham, Davenport and Pratt awards.

Daniel has been involved in numerous service and professional activities, and is passionate about improving conditions in under-served communities. He is a Graduate Student Member of BSE's Strategic Planning Steering Committee and a Team Leader for the Virginia Scientist-Community Interface. He's served as the president of Alpha Epsilon Honor Society @ VT and participated in VT STEP Program as an Academic Coach. In his free time, he volunteers for New River Land Trust & Montgomery County, VA (Stormwater Days).

KATIE WARDINSKI HONORED AS COLLEGE OF ENGINEERING'S OUTSTANDING MASTERS STUDENT

Katie Wardinski, a graduate student in the Department of Biological Systems Engineering, was recognized as the College of Engineering's Outstanding Masters Student. Wardinski was excited when she first heard the news and felt honored to be recognized in the Virginia Tech engineering community.

After learning that this recognition came with a monetary reward, Wardinski decided to donate the money to her high school in West Allis, Wisconsin to create a Women in STEM scholarship for one lucky student. "I feel very passionately about elevating women in STEM and so I thought that would be a really impactful way to directly help someone pursue their interest," she said.

[...]

"My goal for the future is to become an ecological engineer and to use my knowledge and education to help people gain and maintain access to safe, high-quality drinking water and fully enjoy the water resources they have," Wardinski said.



[READ THE FULL STORY](#)



OUR 2021-2022 BSE AMBASSADORS

Top Row from L to R:

- **Madelyn Weaverling**, Environmental Health + Green Engineering
- **Jackie Rothey**, Environmental Health + Watershed Engineering
- **Nicholas Nguyen**, Health Professions + Biotechnology
- **Emily Hunter**, Food Science
- **Hana Coogan**, Food Engineering + Biotechnology

Bottom Row from L to R:

- **Mitch Woodhouse**, Biotechnology
- **Emily Parsons**, Biomedical Engineering
- **Rachel Lake**, Green Engineering
- **Kirin Anand**, Health Professions + Pre-Medicine



Check out our BSE Ambassador webpage to learn more about the program and how Ambassadors play a significant role in our recruiting efforts.

[BSE AMBASSADOR WEBPAGE](#)

This year, we had 17 Senior Design Teams! If you'd like to view their projects and posters, we encourage you to check out our VT BSE Design Weebly site.



VT BSE DESIGN WEEBLY WEBSITE

- **Team Algex - Downstream Plant Design for Microalgal Oil Extraction**
- **Team Budwood - Bud-Growth Off-The-Grid Orchard in Nangarhar, Afghanistan**
- **Team Cancer - Microfluidic Device To Isolate Pancreatic Cancer Biomarkers In The Blood**
- **Team DNA - DNA Robot**
- **Team eCOWS - Designing an Electronic Clinical Opiate Withdrawal Scale (eCOWS)**
- **Team Fish Crossing - Upgraded Stream Crossing for Eastern Brook Trout in Stanardsville, Virginia**
- **Team Gummy - Optimizing Edible Gummy Molding Products & Processes**
- **Team Kidney - Personalized Hemodialysis**
- **Team LED - Developing an Automated LED Fluorescence Microscope to Screen for Mycobacterium Tuberculosis**
- **Team Mushroom - Sustainable Development of Oyster Mushrooms Within a Microgravity Environment**
- **Team Green Infrastructure - Green Infrastructure Pilot Project within Knitting Mill Creek**
- **Team Remote Sampling - Remote Water Sampling Drone**
- **Team Shoreline - Shoreline Restoration and Resilient Infrastructure in Norfolk**
- **Team StoryMap - ArcGIS StoryMap for Watershed Education**
- **Team Vitals - Vital Signs Monitor for Low to Middle Income Countries**
- **Team Food Waste - Sorting Food Waste to Upcycle into Renewable Natural Gas**
- **Team Waves - Breaking Waves at Claytor Lake**



FIRST PLACE

Team LED - Developing an Automated LED Fluorescence Microscope to Screen for Mycobacterium Tuberculosis

Maggie Boyer, Emily Parsons, Lindsey Richardson, Mitch Woodhouse

Advisors: Drs. Penelope & Andre Mulelenaer and Edwards Jacobs



SECOND PLACE

Team Algex - Downstream Plant Design for Microalgal Oil Extraction

Katie Hegadorn, Casey Leigh Hubbard, Maria Gabriella Duarte Splinter, Eric Zirkle

Advisors: Dr. Zhang and Ben Johnson (DSM)



THIRD PLACE

Team Shoreline - Shoreline Restoration and Resilient Infrastructure in Norfolk

Wenni Cai, Morgan Camper, Giovanni Giron, Katherine Michelle Quion, Carol Qianyun Yang

Advisors: Drs. Sample, Sridhar, and Wetland Watch



CHARLES STERLING III

The Interfaces of Global Change IGEP welcomed 12 new Ph.D. fellows in Spring 2021 and BSE Ph.D. student, **Charles W. Sterling III**, was one of them! The incoming cohort holds the most diverse disciplinary representation to date for an IGC admissions cycle, representing 10 different departments and 5 colleges across campus!



LUKE GOODMAN

In our department, good things tend to come in two! BSE Ph.D. student, **Luke Goodman**, was also welcomed into the 2021 Cohort of IGC Fellows!



HANNAH PATTON

BSE Graduate Student **Hannah Patton** received an ICTAS Roop and Kavita Mahajan Award, which will help support her work on point-of-use filtration in private well-dependent households.



BETH PRIOR

BSE Ph.D. Student, **Beth Prior**, received a Virginia Space Grant Consortium Graduate Research Fellowship. The title of her selected "proposal" was "Investigating flood-vegetation interactions through remote sensing and modeling."



KATIE WARDINSKI + BETH PRIOR

Friends that win NSF-CRFP awards together, stay together! BSE Ph.D. Student, **Beth Prior** and BSE Master's Student, **Katie Wardinski** both received a National Science Foundation Graduate Research Fellowship Award!

CONGRATULATIONS TO OUR GRADUATE STUDENTS WHO COMPLETED THEIR RESPECTIVE PROGRAMS IN FALL 2020!

Ali Syed - Ph.D.
Bill Carswell - MS
Jahan Momtaz - MS
Kyle Saylor - Ph.D.
Lauren Wind - Ph.D.

WE'RE EXCITED TO BE WELCOMING OUR NEW GRADUATE STUDENTS!

Fall 2020

Yuanzhi Bian - MS
Riely DeHority - Ph.D.
Annie Duner - MS
Lucas Goodman - Ph.D.
Benjamin Smith - MS
Charles Sterling - Ph.D.
Sami Towsif Khan - Ph.D.

Spring 2021

Md Mahabub Arefin Chowdhury - Ph.D.

The BSE Graduate Student Organization is proud to introduce the 2021-2022 Executive Board!



KATIE WARDINSKI

Katie Wardinski was elected as the GSO President. Katie is originally from West Allis, Wisconsin and is a second year Master's student. Her research interests include water quality and biogeochemistry. She's currently researching dissolved organic matter cycling in geographically isolated wetlands.



BETH PRIOR

Beth Prior was elected as the GSO Vice President for Watershed Science & Engineering. Beth is from Auburn, Alabama and she's a second year Ph.D. student advised by Dr. Cully Hession in the BSE Department and co-advised by Dr. Valerie Thomas in the Forest Resources and Environmental Conservation Department. Her research is focused on coupling remote sensing with hydrodynamic modeling to better understand and model floodplain vegetation dynamics.



PAT CHAISUPA

Pat Chaisupa was elected the Vice President of Bioprocessing. She is originally from Thailand and is a second year Ph.D. student in the Wright Lab. Her research interests are in synthetic biology and bioengineering. Her research focuses on engineering a protein biosensor derived from plants for metabolic engineering, agricultural and medical applications.



RANA GENEDY

Rana Genedy was elected as new BSE GSO treasurer. She's an international student from Egypt and is a second year Ph.D. student. Her research area is Agricultural sustainability, with focus on dairy manure management. She's trying to improve the method used to estimate the temperature of manure during storage to be used as an input parameter in decision support tools and nutrient cycling models on dairy farms.



ANNIE DUBNER

Annie Dubner was elected as GSO secretary. Annie is a first years Master's student from Minnesota. She received her BS degree from the University of Washington in Environmental Engineering. She is advised by Dr. Hession and her research will focus on nutrient removal in surface drainage ditches.



LUKE GOODMAN

Luke Goodman was elected as the the new BSE GSO Volunteer Liason! Luke is finishing the 1st year of his Ph.D. in the Watershed Science side of BSE.. He hails from the land of corn fields and wind farms otherwise known as Iowa. His research interests lie in modeling watershed processes with an emphasis on watershed-scale management and policy decisions.

The VT ASABE Student Branch welcomes three new officers to their executive board for the 2021-2022 school year and celebrates three members for their outstanding service.



KENDALL STAUNTON

Kendall Staunton was elected as the Southeast Regional ASABE President. Kendall is a rising senior from Covington, Virginia and is focusing on our biotechnology track. She plans to apply to some graduate programs next fall in the neuroscience field and hopes to use her degree to work/research in Alzheimer's Disease or CTE.

HENRY PRESMAN

Henry Presman was elected as the new ASABE Vice President. Henry is a sophomore from Rockville, Maryland and is following the Environmental Health and Watershed Management paths. He cherishes opportunities to do community service and help others and hopes to use his BSE degree to do just that.

LINDSY STAMENKOVICH

Lindsay Stamenkovich was elected as the ASABE Treasurer. Kendall is a junior focusing on our biotechnology track in our department.

This new group of officers will be hosting the National ASABE Rally conference, an event where all East Coast institutions with BSE programs come together for activities such as discussion panels, listening to speaker presentations, electing of the new national level officers and the new host college, and participating social events for the BSE student from across the east coast to get to know each other.



HENRY PRESMAN

Henry Presman was honored as the ASABE Outstanding Sophomore. "Henry brings outstanding enthusiasm to every meeting and has gone above and beyond what it means to be an ASABE member by volunteering to be Vice President of the Virginia Tech Chapter this coming fall," **Hana Coogan**, current ASABE President said.

RACHEL LAKE

Rachel Lake was honored as the ASABE Outstanding Junior. "Rachel always contributes to academic and industry discussions with great questions and commentary. She goes above and beyond by sharing her own industry expertise this year by presenting to the ASABE student body about her co-op experience at a Papermill," **Hana Coogan**, current ASABE President said.

ALEXA REED

Alexa Reed was honored as the ASABE Outstanding Senior. "Alexa was a key player at this year's virtual Rally event. She always contributes to discussions with enthusiasm and goes above and beyond for her attendance and participation," **Hana Coogan**, current ASABE president said.

ALUMNI NEWS



GEORGIE ALVIS

Georgie Alvis (BSE Class of 2020) is currently working at Youngblood, Tyler & Associates, P.C., a civil engineering and land development firm in Mechanicsville, Virginia. Georgie is responsible for designing new residential developments!

DANA DABSON

Dana Dabson (BSE Class of 2020) is currently working as a scribe for a primary care physician with plans to work as a medical assistant at the Virginia Women's Center next year!



Dr. Sanja Shukla (MS '95, PhD '00) and **Dr. John Reid** (M.S., '82, B.S., '80) were our first two speakers in our BSE Distinguished Alumni Series! Reid gave a presentation on "Agricultural production systems innovation driven by advances in digital technologies" on Friday, March 26. Shukla delivered a presentation on "Bringing large-scale changes in water and environmental sustainability through win-win solutions" on Friday, April 23. Both Shukla and Reid took some time after their seminars to connect and network with our current BSE undergraduate and graduate students!

John Reid's seminar is available to watch on our website!

EXTENSION NEWS



Twenty-two percent of the Virginia population relies on private water supplies, like wells and springs. The quality and maintenance of these water sources isn't regulated and the responsibility is often left on the owner to test, treat, or address problems with the water and most homeowners aren't aware that they should do this. The Virginia Household Water Quality Program (VAHWQP) helps well and spring owners test their water and understand how to address problems. **Erin Ling** is a Water Quality Extension Associate in our department and she oversees the entire program. The VAHWQP program is one of many Extension programs that was impacted by COVID-19.

During COVID-19, VAHWQP had to cancel all of their programs from March through July 2020 but, despite these changes, still had major success. The team compressed all of the programs from the year into four months and had the same turnout that they would in a regular year! They also transitioned most of their operations online or offered their services in a drive-thru, distanced setting.

In 2020, the program received two grants: the Virginia Environmental Endowment and the Specialty Crop Block Grant. Ling and **Dr. Leigh-Anne Krometis**, associate professor in BSE, were awarded the \$97,000 Virginia Environmental Endowment Grant, which allowed them to subsidize and lower the cost of water testing in six counties in Southwestern Virginia and will provide filters and re-testing to some participants.

The \$60,000 Specialty Crop Block Grant was awarded through the Virginia Department of Agriculture and Consumer Services to Ling, **Dr. Brian Benham**, professor and Extension specialist in BSE, **Asa Spiller**, a project associate in BSE, and **Rachel Parson**, an Extension Associate from the Department of Entomology. The team will examine the impact of water quality on the efficacy of chemicals when specialty crop growers mix the chemicals. It is a new audience for VAHWQP but they took their capacity to provide testing to producers, help them understand their water quality, and advise them on the adjustments they need to make for better crop output.



Robert 'Bob' Lane is an Extension Specialist and Seafood Engineer located at Virginia Tech's Virginia Seafood Agricultural Research and Extension Center (AREC) in Hampton, Virginia. As an AP faculty member, Lane has an Extension and Research appointment through Virginia Cooperative Extension with a home department in Biological Systems Engineering. His program focuses on how seafood moves safely from the ocean to a consumer's plate.

Typically, Lane works in-person with companies in the seafood and aquaculture industries to address food safety, processing, packaging and training through small grants and cost recovery but, during COVID-19, Lane's program switched gears to include solar applications. Lane supported **John Ignosh**, an advanced specialist in agricultural byproduct utilization in our department and received a \$1,168 part of a DMME Solar Grant. Lane supported **Dr. Ronald Meyers**, an associate professor of practice for the Department of Wildlife and Conservation, and received \$3,000 from seed grant. Both grants are aimed at determining how farmers can use solar energy as an income stream.

During COVID-19, Lane's responsibilities included supporting companies transitioning within the seafood industry from a wholesale market to a retail market as well as sending information to these companies about registering for available local, state and federal business loans. This information included \$25 million in USDA funds offered to this seafood industry.

The AREC has grown so much over the course of the years! The AREC's program started by mainly performing local and regional outreach and is now competing in international outreach. Due to this growth, the AREC is moving into a new building that's currently under construction with plans to be finished by November 2021. "This new building allows us to grow," Lane said. "It will allow us to increase our cutting edge work in food safety and security, sustainable food production systems, fisheries and aquaculture, biological and economic research and applied research and outreach to support the aquaculture and seafood industries. The growth keeps our team goal of supporting the industries to continue to be economically viable."

With the new building, Lane and team plan to offer more food safety and HACCP trainings, complete more cutting-edge biome research and research development, hire graduate students to do further research and economic applications, take in more international students, and to collaborate with other departments and agencies on- and off-campus in a more meaningful and impactful way.

FOR MORE INFORMATION ABOUT THE NEW BUILDING, READ THE FULL VT NEWS ARTICLE.

FACULTY + STAFF NEWS

CALS Global announced their 2021 Global Opportunity Initiative Fellows and two of the fellows are from our department! Congratulations, **John Ignosh** and **Dr. Julie Shortridge** for being selected!



"The goal of my extension program is to improve the financial and environmental sustainability of agricultural production systems. To achieve this goal, my program focuses on the implementation of best management practices related to energy efficiency, renewable energy, and nutrient management technologies. Typically, this work involves raising awareness of innovative technologies via demonstration projects and assessing the challenges to adoption of new practices."



"My research program aims to understand how climate change will impact our food and water systems, and what actions we can take today to reduce climatic risks. I use statistical modeling and machine learning to quantify climate impacts in complex systems, and design decision-support methodologies that can support practical planning and decision-making to address these impact."



DURELLE SCOTT

Congratulations **Dr. Durelle Scott** for being selected to participate in the LEAD21 Program! The purpose of LEAD21 is to develop leaders in land grant institutions and their strategic partners who link research, academics, and extension in order to lead more effectively in an increasingly complex environment.

"I'm excited to have the opportunity to participate in LEAD21 over the next year. Higher Education serves an important role in sustainability, and I aspire to apply what I learn through LEAD21 to be part of the solution over the coming decades."



Dr. Cully Hession was the recipient of the Universities Council on Water Resources 2021 Education and Public Service Award!

"I am thrilled to receive this award! It is nice to be recognized for my efforts at the Virginia Tech StREAM Lab and activities related to increasing public awareness of the importance of small streams such as Stroubles Creek in Blacksburg, VA."



Dr. Clay Wright received a VT CALS Strategic Plan Integrated Grant and his proposal was selected for funding by the ICTAS VT Junior Faculty Program!

The PlantSynBio lab will be collaborating with Dr. Bastiaan Bargmann (Translational Plant Sciences) and Dr. Glenda Gillaspay (Biochemistry) to study how plants coordinate their growth depending on available phosphate. Their goal is to discover new ways to decrease the need for fertilizer, and associated environmental damage, while maintaining crop yields.

The PlantSynBio lab will also be working with Dr. John McDowell (Plant & Environmental Sciences) to study how plant pathogens evade plants' immune systems to help make future crops more resistant to diseases.



"Introduction to Biosystems Engineering" editors **Mary Leigh Wolfe**, **Nick Holden**, **Jactone Ogejo**, and **Enda Cummins** meet through Zoom. Photo provided by Nick Holden.

VIRGINIA TECH PUBLISHING PARTNERS WITH INTERNATIONAL ASSOCIATION TO PUBLISH ENGINEERING OPEN TEXTBOOK

In February 2021, The University Libraries' Virginia Tech Publishing and the American Society of Agricultural and Biological Engineers (ASABE) will publish "Introduction to Biosystems Engineering," an open textbook for university-level introductory courses in biosystems engineering.

"Introduction to Biosystems Engineering" is released under a Creative Commons Attribution license (CC BY) and is available both in print and online. The online version is freely downloadable either as a complete work or as stand-alone chapters. In addition, a parallel resource in development, The Biosystems Engineering Digital Library (BEDL), will provide more teaching and learning resources instructors can use in the classroom.

ASABE past-president **Dr. Mary Leigh Wolfe**, Virginia Tech professor and former head of the biological systems engineering department, was one of the project's initiators. She served as one of the four editors of the text along with **Nick Holden** and **Enda Cummins**, professors of biosystems and food engineering at University College Dublin, Ireland, and **Dr. Jactone Ogejo**, Virginia Tech associate professor of biological systems engineering. The four editors share a vision of open access and internalization of their discipline. ASABE and Virginia Tech Publishing have brought that vision to fruition. Wolfe said this book is important because of its global perspective.

"Having authors from around the world helps reinforce the relevance and global impact of our discipline," said Wolfe. "It is important for students to recognize both the differences and similarities of the focus areas of our discipline around the world."

To continue reading, head to our BSE Newsroom for the full article.



Dr. Venkataramana "Sri" Sridhar was selected as a recipient of a Fulbright U.S. Scholar award! This is a highly competitive and prestigious recognition that reflects great credit on Dr. Sridhar's academic achievements.



Leigh-Anne Krometis examines water sources that some people in rural Appalachia use as their primary source of water – even if they have running water in their homes.

VIRGINIA TECH RESEARCHER WORKING TO PROVIDE CLEAN WATER TO APPALACHIA

"If you have somebody who's impoverished and doesn't have access to clean water, that's a problem that we need to address," said **Dr. Leigh-Anne Krometis**.

More than 2 million Americans live without access to safe drinking water or adequate sewer sanitation, according to a 2019 study by the U.S. Water Alliance. That includes around a quarter-million people in Puerto Rico and half a million homeless people in the United States. The biggest chunk, though – around 1.4 million people – are United States residents who live in homes that don't have proper plumbing or tap water.

They are clustered in five areas: California's Central Valley; predominantly Native American communities near the four corners of Utah, Colorado, Arizona, and New Mexico; the Texas-Mexico border; the Mississippi Delta region in Mississippi and Alabama; and central Appalachia. Virginia alone has around 20,000 homes without plumbing.

Leigh-Anne Krometis, an associate professor of biological systems engineering which is in both the College of Agriculture and Life Sciences and College of Engineering at Virginia Tech, is one of the foremost experts on water quality and availability in Appalachia. And while the basics of her work seem, well, basic – "I just spent a decade proving that not having sewers is a bad thing, which we've known for literally thousands of years," she said – the implications are more complex.

Often, the best minds in American civil and environmental engineering are looking abroad, at how to bring clean water to remote villages and slums in developing countries. The crisis over lead in the tap water in Flint, Michigan, was a reminder that all over the United States, people lack access to safe drinking water and adequate sanitation.

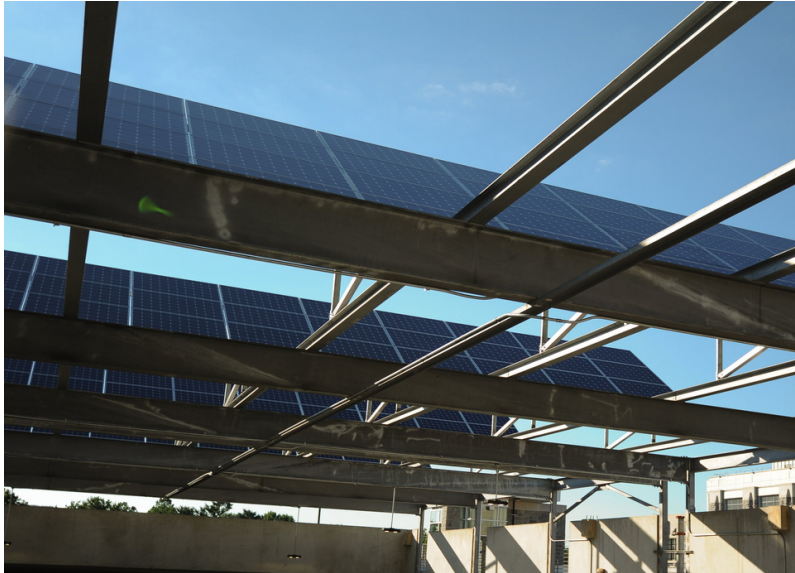
Read the full article in the 2021 Edition of CALS Magazine.



Dr. Leigh-Anne Krometis was featured on WFXR News for her work with Virginia 4-H. Krometis helped create STEM-based educational kids kids can do from home.

Read the full article and watch the news clip on WFXR News' website or on our social media channels.

Let's congratulate the 13-member "A Better Solar "Panel" from Virginia Tech - Now with More Ut Prosim!" project team for receiving a VT CALS Strategic Plan Integrated Grant for March 2021-June 2022! The project team, including 4 BSE faculty (**Dr. Robert Lane, Dr. David Sample, Dr. Julie Shortridge and Dr. John Ignosh**) will explore informational and research needs regarding utility-scale solar in Virginia through an industry-engaged and stakeholder-relevant process.



The Virginia Board of Visitors have approved **Dr. Mike Zhang and Dr. Leigh-Anne Krometis** as recipients of the Elizabeth and James E. Turner Jr. Faculty Fellowship. This award includes both funding and the title of Turner Fellow for a five-year duration. Congratulations!



WHAT CAN STREAM QUALITY TELL US ABOUT QUALITY OF LIFE?

Dr. Leigh-Anne Krometis, along with researchers in the College of Natural Resources and Environment, is using stream quality data to find new insights into the interactions between the health of our natural spaces and human well-being.

[READ THE FULL STORY](#)



JUHONG CHEN

Dr. Juhong Chen was awarded \$450K from the US Department of Agriculture for his proposal, "CRISPR-Equipped Engineered Phages."



LING LI

Ling Li is the Financial Analyst for the department and was honored as the VT CALS Employee of the Month in October 2020!



KELLY PEELER

Kelly Peeler is the Water Quality Lab Manager for the department and was honored as the VT CALS Employee of the Month in April 2021!

NEW FACULTY + STAFF



We are happy to have **Cameron Warren** join BSE in late January as our Communications Specialist. Welcome aboard!



We are excited to have **Chris Coltman** join BSE (and the Department of Food Science and Technology) in late April as Building Manager for the Human and Agricultural Biosciences Building 1 (HABB1) after a long search. Welcome, Chris!

DONOR GRATITUDE



Throughout the fiscal year, we had 101 donors support our department with almost half participating in Giving Day, which occurred this year from noon-noon February 24-25. We want to say thank you to all of our donors! Your support is critical to our department's growth. We encourage you to come back to campus to see the positive impact of your donations. Your contributions provide scholarships for students, enhance their learning experiences, improve our facilities and help us retain and attract eminent professors to the department. Gifts and donations can make a difference between a good and an excellent department. Giving is a critical component of keeping the BSE department competitive with other top programs in the world.

It doesn't take a lot to make a significant impact on the experiences of our students:

- A \$25 gift enables 12 students to collect water samples at our one-of-a-kind StREAM Lab.
- A \$100 gift buys lab materials for a student learning state-of-the-art techniques for processing biological materials in our Unit Operations course.
- A \$1,000 gift funds a team of seniors to work with faculty and practicing professionals on innovative solutions to contemporary engineering challenges as part of their capstone design course.



MAKE A GIFT TO BSE TODAY

You can securely make a gift by filling in our secure online pledge form! When you fill on the form, choose "College of Agriculture and Life Science", then click "select a fund", then scroll and click on "Biological Systems Engineering Department Annual Fund." Alternately, click "select an area" and begin typing "Biological Systems Engineering" in "Search for an area to support" and our department fund will be found via search!