BSE Spring Banquet and Senior Design Showcase

The end of the academic year banquet is always one of the happiest times of year for our department as we celebrate the achievements of our ever-growing BSE community. Attended by department faculty, staff, advisory board members, graduate students, undergraduate students, family, and friends, we held this year’s banquet on campus in the Owens Banquet Hall on April 30th.

Every year at the banquet we announce our departmental scholarships and congratulate those students inducted into Alpha Epsilon, our discipline’s honor society (see p. 4). In addition, we recognize an outstanding student in every class. This year, Kyle Knupp was recognized as our Outstanding Sophomore. Kyle’s focus is environmental health engineering with a minor in green engineering. A Dean’s List student, Kyle has engaged in an impressive array of extracurriculars, including mentoring for the Center for the Enhancement of Engineering Diversity (CEED), serving as Sergeant at Arms for the Delta Tau Delta Fraternity, and volunteering with Relay for Life, Hokie Helpers, and the DuPage County Animal Shelter.

Emily Berg, who focuses on biomolecular/bioprocessing engineering, was honored as our Outstanding Junior. Emily’s academic credentials include five semesters on the Dean’s List and several scholarships, as well as ongoing work as an undergraduate research assistant in BSE associate professor Ryan Senger’s lab. Emily also is active in Engineers Without Borders at Virginia Tech, and is a...
Dear BSE Alumni and Friends,

Happy Spring and Summer! I just took a walk around the drillfield – it is very quiet on a Tuesday afternoon in May – flowers are blooming, trees are green, and the sun is shining! I love the rhythm of the academic year. We have just enjoyed one of the happiest experiences of the year – Commencement! We are excited to congratulate the largest undergraduate class we have ever had – 70 in the BSE Class of 2017! The job market is strong; see page 9 for a list of employers and graduate/professional schools where these graduates will be found in the coming months. Enrollment for senior design in the fall indicates that we will be maintaining this large class size.

Many of you have seen the news that we will have a new Dean of the College of Engineering beginning July 31st. Julia Ross has been named the Paul and Dorothea Torgersen Dean of Engineering. Dr. Ross is currently dean of engineering and information technology at University of Maryland, Baltimore County (UMBC). I joined the rest of the engineering department heads to travel to Virginia Tech’s Northern Virginia Center to meet with Dean Ross in mid-May. It was a great opportunity for the Dean and department heads to get better acquainted and talk about goals, strengths, and opportunities for each department and for the college as a whole. I left the meeting feeling that Dean Ross will be a great leader for the college and that it will be a pleasure to work with her.

At the end of May, the faculty held our annual Action Day, a day that we devote to identifying ways to continuously improve our undergraduate program. We review student work to determine if students are demonstrating proficiency in various outcomes. We review results and feedback from the annual senior exit survey. One activity that is typically highlighted in both of these is the senior, or capstone, design experience. With our increased enrollment, it is an increasing challenge to identify a large enough number of appropriate senior design projects across the interest areas of the students. We ask your help in identifying projects for 2017-2018. Please contact Cully Hession (chession@vt.edu), BSE professor and senior design instructor, if you have an idea for a senior design project. We are also looking for industry/government mentors for projects. While each design team has a faculty advisor, we strive to have an industry/government advisor for each as well. Please let Cully or me know if you would like to get involved.

In the coming months, you will be hearing more from BSE as we reach out to alumni – we would like to visit you where you are and always look forward to seeing you in Blacksburg, too.

Best wishes! Go BSE! Go Hokies!

Mary Leigh Wolfe
Professor and Department Head

Valued Contributors to BSE (12/1/16 - 5/31/17)

Thank you to all of our alumni, friends, and organizations who generously support the department through gifts and donations! Your contributions help the department enhance the educational experience of our students. You have given us the means to award scholarships to many students. We also use your contributions to help recruit outstanding graduate students and support student travel to conferences and to participate in special projects both domestically and internationally. Your contributions also support departmental activities that enhance the educational and work experience of BSE students, staff, and faculty. Please contact the department (mcclark5@vt.edu, mlwolfe@vt.edu) if your name has been omitted from this list.

Neal Blackwell
Mark Byerly
Lia Doumar
EB & Paula Everett
Essex Finney
Joseph & Lisa Flagg
Joseph Gardner, Jr.
Katy Graham
Green Circle Ideas Holdings, Inc.
Hope Greiner
Barbara Hale
Charles Hatcher, III
Brian & Mary Holmes
Ann & Chris Kenimer
Robert & Fran Lane
Charles Leach
Suzanne Page-Pryde
William & Mary Perdue
Robert & Helen Pitman
Arthur Pryde
Jonathan & Shannon Resop
Easley Smith
John Smith, Jr.
Tom Trykowski

Kevin Tweedy
David & Sarah Vaughan
Larry Wills
Eugene Yagow
Xinhao Ye

Mary Leigh Wolfe
Professor and Department Head
BSE Ambassador. Finally, Connor Brogan was selected as our Outstanding Senior for 2017. Connor has been on the Dean’s List every semester of his undergraduate career, and has been actively pursuing undergraduate research under BSE associate professor Durelle Scott, which he will continue as an accelerated MS student next year. While at Virginia Tech he co-founded the ASABE Aquaponics Design team and served as a mentor in the Galipatia Living Learning Community. In addition to his professional activities, Connor has a passion for the sport of hurling and founded the Gaelic Athletic Association Hurling Club at Virginia Tech in 2016.

The department also has many outstanding graduate students! At the banquet we specifically honored Jonathan Travis Spangler as this year’s Outstanding MS Student. Travis began his MS in BSE under BSE associate professor David Sample in 2015 at the Hampton Roads Agricultural Research and Extension Center (HRAREC). His research has resulted in two submitted refereed journal articles, two conference presentations, and the Walker Fellowship. Travis has also demonstrated excellent teaching ability in participating with a Virginia Cooperative Extension (VCE) and American Society of Civil Engineers (ASCE) sponsored workshop on the U.S. Environmental Protection Agency’s Stormwater Management Model (SWMM). Weihua Guo, a graduate student in BSE associate professor Xueyang Feng’s lab, was named this year’s Outstanding PhD Student. Since joining the program, Weihua has been extremely productive, publishing 10 peer-reviewed papers with Dr. Feng in highly respected journals, contributing to a book chapter, and presenting at seven conferences. Moreover, he has served as a graduate teaching assistant for five different courses, and supervised 10 undergraduate students in their research.

The banquet also provides an opportunity for our graduating seniors to share their final capstone senior design projects via short oral and poster presentations. This year we had 17 distinct projects that represented a diversity of design problems, from biomedical to food to watershed science engineering. Three teams were honored with cash awards for their outstanding projects: First place was Neonatal ECG Device for Future Use in Malawi (Robert Accolla, Caitlyn DeAngelus, John Brabender, Marisa Cole and Lea Sarment). Global Assistance of Infant Resuscitation (Ellen Hoover and Abigail McCranie) took 2nd place and 3rd place went to Design of Los Quiscamotes Water Supply (Jean Janvier, Haley Kujawa, Bianca Pinto and Jason Wilkinson).
ASABE Student Branch News

Spring semester blossomed with wonderful social, professional, and service opportunities for ASABE members. In February, we hosted a pancake etiquette dinner where students could practice their table manners for professional events, and volunteered with Habitat for Humanity in Roanoke, Virginia to help finish a house that was being built for a family in need. In March, we held a bowling night for faculty and students to mingle and have a little friendly competition. We heard from two guest speakers, Dr. Alex White from the Department of Dairy Science, and Erin Ling, BSE Extension Associate, from the Virginia Household Water Quality Program within Virginia Cooperative Extension. Dr. White gave us some helpful tips on how to manage our finances after college, and Ms. Ling spoke about her Cooperative Extension program testing household water quality (for more on Erin Ling and the Virginia Household Water Quality project, see page 11!). Fourteen student members and one faculty member also attended the ASABE Southeastern Regional Rally at the University of Arkansas from March 16th to 19th. We were fortunate to be able to travel to see the programs and facilities at another university and build connections with other biological engineers. All of our attendees had a great time and are looking forward to Rally at the University of Kentucky next Spring! We were honored to be awarded the best student branch out of the 17 schools in our region for the work that we do within the local ASABE organization, as well as outside the organization. (See picture of us with the trophy on the bottom of page 3.)

We hosted a lab tour night where students had the opportunity to see departmental facilities, meet faculty and graduate students and learn about some of the projects that students can get involved with as undergraduates. We also volunteered through The Big Event to help a local church weed and plant their gardens, hosted another Stroubles Creek clean-up with the American Water Resources Association, and walked to end cancer at the largest collegiate Relay for Life.

Taylor Lohneis, ASABE President 2016 - 2017

Alpha Epsilon (BSE Honor Society)

The Virginia Tech Eta Chapter of Alpha Epsilon (AE) “the honor society of food, biological, and agricultural engineering”, would like to welcome our more than 15 new members, both at the Graduate and Undergraduate level! During the BSE Spring Banquet, a few of the new members were initiated by AE’s current vice-president Frank Gillam.

For the academic year of 2017-2018, we are in the process of sending out the requests for nominations for our officer positions, and we will hold elections soon. We truly hope that the new leadership will carry on with the great work AE has done all these years, spreading out our ideals of personal and academic excellence.
Fall 2016 Dean’s List

Congratulations to the BSE undergraduate students who made the Dean’s List in the fall 2016 semester. Undergraduate students must attempt at least 12 credit hours graded on the A-F option and earn a 3.4 grade point average (on a 4.0 scale) during the spring or fall semester to be awarded Virginia Tech Dean’s List status.

**BSE Sophomores (in fall 2016)**
- Shuangyi Cai
- Courtney Deacon
- Kyle Knupp
- Laura Wichin

**BSE Juniors (in fall 2016)**
- Nikita Balani
- Emily Berg
- John Colby
- Garrett Craft
- Lindsay Dennis
- Taylor Duncan
- Samuel Elizondo Villarreal
- Serena Emanuel
- Alyssa Ford
- Austin Gouldin
- Maria Graber
- Alexandra Groen
- Daniel Hildebrand
- Michael Johnson
- Andrea Kuliasha
- Nikkole Lenardson
- Taylor Lohneis
- Robert Loving
- Lee Markley
- Elizabeth Merin
- Kristen Merrifield
- Whitley Miller
- Rachel Molloy
- Thomas Murray
- Joel Neifert
- Jenna O’Brien

**BSE Seniors (in fall 2016)**
- Seth Oliveira
- Joseph Paoletti
- Elaina Passero
- Jacob Patish
- Andrew Penshorn
- Christopher Perkins
- Rebecca Pettit
- Teresa Reiber
- Casey Schrading
- Gavin Taitano
- Alison Waldman
- Lauren Wills
- Urban Withers
- Austin Wozniak
- Robert Accolla
- Christine Ash
- John Brabender
- Dallas Bridges
- Connor Brogan
- Carolyn Carrithers
- Sarah Chaikind
- Marisa Cole
- Benjamin Croom
- Caitlyn DeAngelus
- Taylor Dean
- Kevin Dennis
- Micah Dezort
- Ruochen Dong
- Vasilios Doumis
- Ashlea Duzyk
- Nicole Fazekas
- Evan Frazier
- Malee Garcia
- Kaitlin Greenleaf
- Allison Guzman
- Justin Haber
- Reece Hoerle
- Ellen Hoover
- Dina Huynh
- Jean Janvier
- Danielle Jones
- Matthew Kapinos
- Sydni Koch
- Samuel Kosich
- Haley Kuwara
- Stephanie Lundgren
- Sean Mackey
- Ryan Marano
- Abigail McCranie
- David Meier
- Gina Muan
- Chukwuyenum Nduka
- Sara Peterson
- Bianca Pinto
- Dalia Rakha
- Keean Ross
- Lea Sarment
- Cara Sarver
- Kaitlyn Schneider
- Suraye Solis
- Morgan Steel
- Jason Wilkinson

BSE Scholarships

Through the generous donations of alumni and friends, the BSE Department has 13 endowed student scholarships. At this year’s BSE Spring Banquet, the department awarded scholarships to 47 undergraduate students for 2017-2018. Scholarships are awarded based on need and/or merit, depending on the specifications of the endowment.
BSE Ambassadors

The 2016-2017 BSE Ambassadors have been busy this spring representing Hokie and departmental pride at various recruiting events. We have had three COE Open House events targeting prospective high school and transfer students: Hokie Preview, Hokie Focus, and the full-day COE Open House. The spring is particularly busy with individual tours for high school students and their families. Additionally, the Ambassadors visited classrooms and student clubs at local high schools in Roanoke and all over the New River Valley recruiting new VT engineers.

Graduate Student Organization (GSO)

Despite busy schedules and impending deadlines, Spring 2017 was an exciting semester in the BSE department. The weekend hikes that frequented the fall semester continued, although admittedly more intermittent than ideal. Led by Tyler Keys (L&W Vice President), Vinit Sehgal (Secretary), and me, destinations included Dragon’s Tooth, the Cascades / Barney’s Wall, Bald Knob / Mountain Lake Conservancy, and the highest peak in Virginia, Mt. Rogers. These hikes will continue over the upcoming summer. BP Vice President, Laura Hanzly, continued to lead the beloved departmental happy hour, held every Friday.

Several prospective graduate students visited this semester, and our current students enjoyed voluntarily devoting time to invite them to join our graduate student body. Additionally, a few of us reached out to undergraduate researchers at the Undergraduate Research and Creative Scholarship Conference and encouraged them to consider BSE for graduate school.

Brady Coleman
GSO President 2016-2017

NEW GRADUATE STUDENTS - SPRING 2017

DiCarlo, Morgan
(Shortridge) - BS Civil Engineering, Stony Brook University, 2016

Grutter, Brittany
(Hession) BS Global Conservation, George Mason University, 2016

Thinking about grad school...
Or know of someone who is?
BSE is accepting applications
Application due date for Spring 2018: December 15, 2017
For more information, please visit www.bse.vt.edu/apply
**BSE Undergraduate Researcher Featured at ACC Meeting of the Minds Conference**

Austin Wozniak, BSE junior, is researching the use of roadside springs as supplementary household water sources in Appalachia. His work involves documenting levels of usage and the presence of contaminants like E. coli in spring water. Encouraged by his advisor, BSE assistant professor Leigh-Anne Krometis, he presented his initial findings at Virginia Tech’s Undergraduate Research and Creative Scholarship Conference this February. There, Austin gave an oral presentation, and was selected by faculty judges to be one of six students to represent Virginia Tech at the ACC Meeting of the Minds Conference at Duke University (only two of whom gave oral presentations!) The opportunity to attend the ACC Meeting of the Minds Conference was an amazing experience, not only giving him a chance to draw attention to the research he is doing, but also getting to see what research conferences are like, while visiting Duke University and the city of Durham. Friday night featured a great keynote address and an in-house dinner. Saturday was packed with poster and oral presentation sessions and another keynote speaker. Sunday, in between another poster and oral session, the Virginia Tech group went to the center of Duke’s campus to see the famous Cathedral and Gardens. They closed the weekend with a final keynote address, and then made the trip back to Blacksburg.

**BSE Undergraduate Fills Out Collegiate Career with a Co-Op**

From BSE junior, Casey Schrading: “When I came to Virginia Tech, I was planning to do four years of school, graduate, and start working. However, due to switching majors and studying abroad, I was put in a situation where taking a spring off and doing a long term co-op was my best option, and I am so happy this was the case. Spring 2016, I worked as an intern for Princeton Hydro, LLC, an environmental consulting firm in Princeton, NJ. Throughout my time with Princeton Hydro, I did design work in AutoCAD, ran soil analysis tests in the geotechnical lab, conducted fish surveys, assessed streams and creeks, managed/treated eutrophic lakes, worked on numerous dam removal projects, and was even involved in one of the first thin-layer deposition projects in New Jersey. The thin-layer deposition project involved dredging a sediment-filled coastal channel and using the dredged material to build up, and hopefully restore, a nearby receding salt water marsh. I gained an enormous amount of hands-on experience and even got to work alongside my dad, a US Fish and Wildlife biologist who works closely with Princeton Hydro. I am grateful for the experience I had with Princeton Hydro and look forward to gaining more hands-on experience in the future.”
Degrees Earned

Congratulations to twelve BSE graduate students who completed their degrees in spring/summer 2017

MS Degrees

**Sasha Howes** (Advisor: Ogejo), *The effect of thermophilic anaerobic digestion on ceftiofur and antibiotic resistant gene concentrations in dairy manure.* Sasha is working at Genentech as an Intern in Early Stage Cell Culture and looking for a full time position in the Bay Area of California.

**Travis Spangler** (Advisor: Sample), *An assessment of floating treatment wetlands for reducing nutrient loads from agricultural runoff in coastal Virginia.* Travis is currently interviewing for jobs in the Richmond, VA area.

PHD Degrees

**Clara Darko** (Advisor: Mallikarjunan), *Effect of storage conditions on aspergillus growth and aflatoxin production in peanuts: a study in Ghana.* Clara has returned to her previous employment with the Ashanti Regional Agricultural Engineer Ministry of Food and Agriculture in Ghana.

**Sampath Karunarathne** (Advisor: Ogejo), *Compartmental process-based model for estimating ammonia emission from stored scraped liquid dairy manure.* Sampath is looking for a position in bioprocess/environmental engineering.

**JaeEung Kim** (Advisor: P. Zhang), *In vitro synthetic biology platform and protein engineering for biorefinery.* JaeEung will start his career working at Korea Research Institute of Chemical Technology at the end of July.

**Sung-Ho Paek** (Advisor: Ruder), *Stochastic gene expression in biomimetic biofilms.*

**Jordan Wetzig** (Advisor: Heatwole), *Spatial and temporal pattern of groundwater in a small watershed in Eastern Zambia.* Jordan is a water resources engineer for AECOM in Germantown, MD.

**Lauren Wind** (Advisor: Hession/Krometis), *Persistence of culturable antibiotic resistant fecal coliforms from manure amended vegetable fields.* Lauren is continuing in her research as a PhD student in BSE at Virginia Tech.

**Fatma Sahmurat** (Advisor: Mallikarjunan), *Hurdle technologies using essential oils and high hydrostatic pressure to inactivate E. coli in fresh beef.* Fatma has returned to her home country, Turkey to begin work as a faculty member at a University.

**Felicia Scott** (Advisor: Ruder), *Controlled hybrid material synthesis using synthetic biology.* Felicia is currently searching for jobs in the biotechnology industry.

**Daniel Wolozny** (Advisor: Ruder), *Additive manufacturing for robust and affordable medical devices.* Daniel is a senior engineer at Biogen Idec, Inc.

Greetings from University College Dublin! I stepped off the airplane back in January, and have been searching for pots of gold ever since. While no pots of gold have been discovered, I have found an incredible Irish community and a wealth of international knowledge through my studies - not bad!

My courses include ecological modeling, Irish water quality and management, and food process engineering - all expanding my perspectives as a global citizen and engineer. Through the UCD mountaineering club, I’ve made lifetime Irish friends and even went rock climbing in Wales!

While Dublin is an international city, I have experienced the rural, relaxed small-town environments where Irish culture is so prevalent and accents are stronger (sometimes so strong I can’t even understand!). With public transport so widespread and affordable, a typical weekend will be filled with hiking through peatlands, biking along coastlines, and climbing ancient castles! The evenings are filled with live music and even livelier conversations with the friendly locals that frequent the pubs. Flights as cheap as $10 have taken me to other parts of Europe, too (Portugal, England, Scotland, Germany, Slovenia, and Italy to name a few!). Between traveling in Europe and living in Dublin, I’ve gained a new understanding of cultures that is impossible to gain otherwise - an invaluable point of perspective.

My time in Dublin thus far has taught me the importance of feeling uncomfortable. To travel outside of my boundaries, both literally and metaphorically, continually opens my eyes to aspects of myself and the world. It might be “good craic” here, but I do miss my fellow Hokies! Sending the luck of the Irish your way as exam time approaches!

If you have any questions about studying abroad, feel free to contact me at serenae@vt.edu

“What’s the craic” in Ireland?

Senior Placement

While there’s always some wistfulness at the end of the semester as we see yet another class of Biological Systems Engineers graduate, there’s also a great deal of excitement among faculty and staff as we learn of all the amazing places our newest alumni are headed! Here’s just a sampling of some of our senior placement for 2017:

**Industry/Government:**
- Accenture
- Anheuser-Busch (2)
- Aquaculture Innovation Center of Rutgers University
- Army Corps of Engineers
- Cargill
- City of VA Beach Public Works
- Cognizant Technology Solutions
- Dana Farber Cancer Institute
- Fairfax County Public Works
- Frito-Lay
- Froehling & Robertson, Inc.
- General Electric GRC (2)
- Hazen & Sayer
- Ingersoll Rand
- K2M Inc.
- Kraft-Heinz
- National Institutes of Health
- Pfizer
- Plexus
- Timmons Group

**Graduate/Professional School:**
- MS Program, Biological Systems Engineering, Virginia Tech
- MS Program, Biomedical Engineering, Virginia Tech (2)
- MS Program, Business Analytics, Virginia Tech
- MEng Program, Bioengineering, UC-San Diego
- PhD Program, Environmental Science, Ohio State University
- PhD Program, Bioengineering, University of Florida
- Medical University of South Carolina College of Pharmacy
- University of Michigan Dental School
- Virginia College of Osteopathic Medicine
OGEJO LEADING A NEW USDA GRANT

BSE Associate Professor Jactone Arogo Ogejo is leading a new USDA grant: “Exploring microbial transformations during liquid manure storage to improve nitrogen management on dairy farms” (collaborators: Biswarup Mukhopadhyay (biochemistry) and Matthias Chung (math)). During storage, up to 60% of nitrogen (N) in manure can be lost to the atmosphere through volatilization of reactive N gases, presenting potential challenges to the health of our environment, as well as a loss of the fertilizer value of the manure. Typically, N loss from stored dairy manure is rooted in the microbial activities and other biogeochemical processes. This study seeks to develop meaningful and/or effective mitigation technologies to minimize N loss from these structures. To achieve this desired outcome, it is paramount to understand the microbial communities and associated biogeochemical processes occurring during manure storage. The long term goal of this study is to uncover the complex interaction of the microbial, chemical, and physical processes that occur during manure storage with respect to N. The specific objectives are to: (1) assess and quantify active microbial consortia and their summative effects on the fate and transformation of N and carbon (C) in liquid dairy manure during storage under normal operating conditions on-farm and (2) link the microbial consortia, N and C transformations in manure and losses of N (e.g. ammonia, nitrous oxide) and C (methane and carbon dioxide) to the atmosphere during storage. The outcome of this work will increase the understanding of microbial driven transformation and losses of N during manure storage, which will be useful in improving decision support tools and process-based models for evaluating N cycling and in identifying and designing suitable strategies to minimize N losses to the environment during manure storage. Both field and laboratory experiments will be conducted to collect data to be used in developing the new knowledge about N loss from stored manure.

BSE Professor Leads New Collaborative Grant to Support Agricultural Management

Assistant Professor Julie Shortridge has received a grant from the USDA Southern Extension Risk Management Center to develop programming that assists agricultural producers in managing regulatory, financial, and production risks associated with irrigation in coastal regions of Virginia. This grant will fund a two-day workshop at Virginia Tech’s Tidewater Agricultural Research and Extension Center (AREC) and the development of an interactive tool that will help producers estimate the financial costs and benefits of irrigation based on their farm’s characteristics and information about crop water needs, typical rainfall in different regions of the state, and historic prices for different agricultural commodities. Dr. Shortridge is conducting this project in collaboration with David Langston, Director of Virginia Tech’s Tidewater AREC, extension specialists from North Carolina and Georgia, and the Virginia Department of Environmental Quality.
Benham Leads Charge to Protect the Chesapeake Bay

BSE Professor Brian Benham is continuing Virginia Tech’s long-standing commitment to the Chesapeake Bay Scientific and Technical Advisory Committee (STAC). He was recently elected to serve a two-year term as STAC Chair. His term runs from September 2017 - September 2019. About half of Virginia lies within the Chesapeake Bay watershed and about half of Virginia’s residents live within this watershed. While a valuable resource, the Chesapeake Bay is currently designated as “impaired”, i.e. the Bay fails to meet several water quality standards. In 1983, the Chesapeake Bay Program was established as a regional partnership to tackle restoration of the Bay. Bay Program partners include the states of Maryland, Pennsylvania, Delaware, New York, West Virginia, and Virginia; the District of Columbia; the Chesapeake Bay Commission, a tri-state legislative body; the US Environmental Protection Agency; and various advisory groups. One of those advisory groups is STAC, comprised of some 40 academicians from around the Bay watershed. Four BSE faculty members (Benham, Easton, Sample, and Yagow) are current STAC members and bring their unique perspectives and experiences to effect better management of this critical water body.

Virginia Household Water Quality Program Continues to Grow!

One in five Virginians rely on private wells or improved springs for their household water, and these homeowners are completely responsible for routine water testing, system maintenance, and addressing problems. The Virginia Household Water Quality Program (VAHWQP) is a Virginia Cooperative Extension (VCE) program coordinated by BSE Extension Associate Erin Ling and BSE Professor Brian Benham. VAHWQP offers affordable, confidential water testing and education through local Extension offices to help well and spring users effectively manage their water quality and systems. Thanks to a network of trained Extension agents and volunteers across the state, collaborative research projects, and significant press coverage in recent years, the program is growing considerably (by over 200% in the last year!). In 2016, samples from over 2,500 homes in 78 counties were analyzed, representing water supplies for over 6,300 individuals. Recent collaborative graduate student theses and dissertations have helped to characterize concentrations and sources of lead in homes supplied by wells, sources of bacteria in well water, and the presence of arsenic in Virginia groundwater. Ongoing research aims to examine the presence of contaminants such as pharmaceuticals and ingredients in personal care products in private water supplies. Citations for published research are available at: http://www.wellwater.bse.vt.edu/resources.php#popularPress. Recent press coverage of VAHWQP and associated research findings include:

- National Public Radio (http://wvtf.org/post/what-s-your-water-virginia-getting-your-water-tested#stream/0), and

For more information about the program, and this year’s list of drinking water clinic programs, please visit http://www.wellwater.bse.vt.edu/ or contact Erin Ling at wellwater@vt.edu.
BAKER NAMED ADVISOR OF THE MONTH

Priscilla Baker, the undergraduate academic advisor for BSE, was named the Advisor of the Month for April 2017. Priscilla joined the BSE department in April 2014. Since becoming the undergraduate advisor for the BSE department, she has completely transformed the academic advising in our department and has become an incredible asset for the students and the department as a whole. Starting with the degree checksheet and a limited number of advising documents, Priscilla developed easy-to-follow “pathways” for a number of career areas, tip sheets to help students navigate common curriculum problems, a guide to minors that integrate well with a B.S. in BSE, and a website for easy access to all of this material. Each week she sends the students concise, timely, informative, organized, and color-coded advising and career emails; a senior once said that none of the students have any excuse for not taking the correct course, because Ms. Baker makes it so easy! It is evident that the students’ best interests are central to everything Priscilla does. She strikes a good balance between showing caring and concern for their challenges while still pushing them to take responsibility for their academic and professional careers.

In addition to advising, Priscilla also coordinates recruiting activities, including the recruitment, training, and management of the BSE ambassadors. She recently expanded our recruiting efforts to high schools. Her prior experience as a high school teacher, and parent of high school students, has been invaluable in this effort. We now have entering sophomores who decided on our major before even graduating from high school! You can read Priscilla’s answers to interview questions at http://www.advising.vt.edu/index.php/pastadvisorofthemonth/192-p-baker.

Farewell, Thank You, and Best Wishes to Gene Yagow

Senior Research Scientist Gene Yagow (MS ’83, PhD ’97) retired in May 2017 from BSE after over 30 years of exemplary service to the Virginia Tech academic community as both a graduate student and faculty member. A native of Illinois, Dr. Yagow received B.S. degrees in Agriculture and Agricultural Engineering from the University of Illinois in 1969. Prior to joining the faculty at Virginia Tech, Yagow worked as a Peace Corps volunteer in Malaysia, a science teacher in Roanoke, and a Water Control Engineer with the Virginia Department of Conservation and Recreation, among other endeavors. He joined the faculty in October 1997 as a Research Scientist and in January 2009 he became the first person at Virginia Tech to be promoted to Senior Research Scientist.

Dr. Yagow is nationally recognized for his research and outreach activities related to non-point source pollution fate and transport and improving surface water quality, including Total Maximum Daily Load (TMDL) development and implementation. His work on water quality has been instrumental in setting water quality standards in Virginia. He has received numerous awards including ASABE’s Standards Developer Award in 2008, and a Commendation Award in 2007 from the Virginia Chapter Soil and Water Conservation Society (SWCS) for excellent service as President, webmaster, and student chapter advisor. His devotion to teamwork has been recognized with several team awards including Virginia Tech’s Alumni Team Award for Outreach Excellence in 2009, and the 2004 Merit Award by the Virginia Chapter SWCS.

Dr. Yagow has had a profound positive influence on those he’s worked with at Virginia Tech and the broader community, as demonstrated through his service to students (faculty advisor for the Virginia Tech Animation Society and the VT SWCS Student Chapter), the BSE department (advising graduate students and senior design teams, and serving on committees), and the community-at-large (VT-Engage, Habitat for Humanity in Roanoke, and Haiti). We are grateful to Gene for his dedicated work, and wish him all the best in retirement!
BSE Flashback

Successful extension programs like the Virginia Household Water Quality Project (see p. 11) and ongoing research efforts like undergraduate Austin Wozniak’s ACC Meeting of the Minds water scavenging investigation (see p. 7) continue a long history of departmental research and outreach related to the provision of safe drinking water in rural Virginia communities. A recent glance through our photo archive uncovered this picture of departmental students and faculty in the 1930s developing a local spring to provide potable household water. Efforts to ensure the quality and availability of drinking water by faculty, extension agents, and students will undoubtedly continue to honor this legacy in the years ahead.

1950s

Fred B. Givens (BS ‘58), 82, of Newport, VA passed away on April 13 in the late afternoon. He earned a BS in Agricultural Engineering from Virginia Tech and a MS from Penn State. Fred retired from USDA Soil Conservation Service and later served as a Director of the Mountain Castles Soil and Water Conservation District (SWCD) and as Virginia WCD Area I Chair. His contributions to conservation were many, such as designing flood control dams and shoreline erosion projects, Chesapeake Bay program development and his own farming operation in Craig County. He will be greatly missed.

1980s

Earl Kline (BS ’82, MS ’84) has been named the Charles Blakeslee Nettleton Faculty Fellow in Forest Products by the Virginia Tech Board of Visitors. The fellowship recognizes teaching and research excellence. Earl has been a professor of wood process control at Virginia Tech in the Department of Sustainable Biomaterials since 1988. He enjoys teaching and working with students on a daily basis. When he’s not interacting with students, he’ll most likely be riding his mountain bike on the wooded trails around Blacksburg.

2000s

Jay Johnstone (BS ’11) and his wife Diana recently moved back to Blacksburg after spending four years in Williamsburg, VA and one year in Key West, FL. Jay has worked as a Consultant Water Resource Engineer and Civil Engineer in both the public and private sectors, and is currently working in Roanoke, VA as a Professional Engineer for Stantec. Jay and Diana just recently welcomed their first baby, George, to the world and couldn’t be more happy. The Johnstones are in the process of purchasing a home in Blacksburg and setting down roots for their growing family.

Liz Luby (BS ’12) was named the Agricultural and Biological Systems Engineering 2016 PhD student of the year at Iowa State University and the 2017 ASABE Iowa Section outstanding PhD student of the year. Liz’s research into antibiotic resistance in agricultural systems is advised by fellow BSE alumna, Michelle Soupir (MS ’03; PhD ’08). Last September, Liz married Ryan Rieke in Ames, Iowa. In their spare time, the newlyweds enjoy vegetable gardening and getting lost while exploring the country.

BSE ALUMNI NEWS
The Entrepreneurial Spirit of BSE Alumni

The entrepreneurial spirit is alive and well among BSE alumni! From a 1985 graduate who founded a successful company 25 years ago and has now turned it over to the next generation to an alumna literally growing a business in Blacksburg, these alumni demonstrate that every path to entrepreneurial success is unique.

After graduating from Virginia Tech with a degree in agricultural engineering, Hal Bailey (BS ’85) began work for Johns Manville Corporation in Richmond as a Project Engineer. Eventually promoted to Plant Engineer, in 1991 he was approached for a Branch Managers position in a consulting engineering company in the Roanoke Valley. Although that position only lasted for about one year, he gained tremendous management experience in a short period of time and decided at the ripe old age of 29(!) to start Engineering Concepts, Inc. (ECI), a consulting engineering firm offering civil and environmental engineering and surveying services. He was President and CEO for 24 years before transitioning the ownership to two long-term employees of the company. Looking back, he cites his education in agricultural engineering as critical to his success. “The background with the variety of course work has been of great benefit to me over my career,” says Hal. “In the small consulting engineering firm arena, especially at startup, being able to work on a wide range of projects is critical to success and survival.” When asked what his plans are now that he has transferred ownership of ECI, Hal says he will stay involved with the firm in a limited capacity for the next several years, if not longer. He is also involved in three other companies and looks forward to being able to spend more time managing and expanding those opportunities. He added, “Obviously, more free time with family, friends and helping where I can in the community are great benefits.”

It’s safe to say that Sally Walker (BS ’07, MS ’09) is glad that life doesn’t always go as planned! Like many college students, she picked a major, continued her education in graduate school, and intended to look for employment related to her graduate research, land use impacts on water quality, after graduation. However, her husband, Jason Pall, also a Virginia Tech graduate, was interning at a local organic farm and became a farm manager at Virginia Tech’s Kentland Farms. While Jason’s interest and experience in farming was increasing, Sally was interested in moving away from traditional first jobs post-graduation so the couple decided to change plans and start their own farming business.

Fast forward through seven years of hard work, and the couple’s business, Glade Road Growing, is thriving on close to 50 acres of leased land within the Blacksburg town limits. The farm relies on organic and sustainable farming practices. The available flat land is used for growing vegetables such as spinach, kale, onions, and radishes, with an expanded selection during summer of cucumbers, peas, carrots, tomatoes, potatoes and many other vegetables. Food grown on the farm (including spinach, kale, cucumbers, peas, chickens and duck eggs to name a few) is sold locally at their seasonal farm stand, Blacksburg Farmers Market, and through community farm shares. In addition to their degrees, Sally says she and Jason had to rely on training through conferences, reading materials, and YouTube to grow their business. They also listen carefully to their customers and are always striving to fulfill the needs of their clientele. Sally relates that the business is more than a job, it’s a lifestyle, and she can’t imagine anything better.

Rich Allevi (MS ’12), is the Co-Founder and Director of Operations of Sun Tribe Solar. After defending his MS thesis in BSE in 2012, Rich spent a summer traveling in South America before beginning a job at Cargill, Inc in Ithaca, NY. During his trip, he stayed in a small town in Ecuador and helped a local resident build a sustainable home, including the design and construction of a passive solar thermal system from recycled materials, an experience that laid the groundwork for his later interests. Excited to see the world, Rich eventually transferred within Cargill to a position in China. Following almost a year’s worth of work and adventure in Asia, he returned to the United States with a new-found interest in renewable energy and began work for Juwi Solar, Inc., in Boulder, Colorado.

Aiming to return to the Blue Ridge Mountains, Rich moved to Charlottesville, VA to work at a solar energy company Altenery. From there, Rich was encouraged to start his own business, which led to the establishment of Sun Tribe Solar in April 2016. Rich founded Sun Tribe Solar with Taylor Brown, a former Hokie classmate, who had been working for Siemens Energy and was also interested in steering his career in the direction of renewables. Over the past year, Sun Tribe Solar has developed...
Three BSE alumni received alumni awards from the College of Agriculture and Life Sciences (CALS) for their professional achievement, leadership, and service to their home department, the college, and the fields of agriculture and the life sciences. Awards were presented at the CALS annual banquet held in March. Congratulations to Jay, Harsha and Leslie!

Dr. Jay Harmon (PhD ‘89) was awarded the BSE Distinguished Alumni Award. As Professor of Agricultural and Biosystems Engineering at Iowa State University since 1993, Harmon holds a rare triple appointment in extension, research, and teaching. He also serves as Interim Associate Dean for Extension and Outreach and Interim Director for Agriculture and Natural Resources Extension and Outreach in the College of Agriculture and Life Sciences at Iowa State. Harmon’s extension and research programs have focused on livestock production systems, and he teaches senior design courses and wood engineering. Harmon is Professor-In-Charge of the Midwest Plan Service (MWPS), which is the principal resource of agricultural and rural technology information in the U.S. National recognition for his accomplishments includes the National Pork Board Swine Innovation Award, Education Category (with colleagues) and induction into the Rural Builders Hall of Fame in 2003. Recognitions by ASABE include the Presidential Distinguished Service Award in 2010, induction as a Fellow in 2011, the Henry Giese Structures and Environment Award in 2011, and most recently, the G.B. Gunlogson Countryside Engineering Award in 2015 for exemplary service to animal production systems.

Dr. Harsha Kittur (BS ‘11) was awarded the BSE Outstanding Recent Undergraduate Alumni Award. This award recognizes alumni who have received an undergraduate degree in BSE in the last 10 years. Kittur is completing a Doctor of Philosophy degree in bioengineering at UCLA in spring 2017. For his main dissertation work, Kittur designed and built a patented diagnostic tool that tests cell transfer from one protein-coated surface to another, producing 64 new adhesion-based biomarkers for breast cancer characterization. He has co-authored six refereed journal articles. Kittur was a teaching associate for upper-division undergraduate classes for biochemistry and bioengineering students. He was also active in the Engineering Graduate Students Association at UCLA, serving one year as President. For the past six summers, Kittur was an Assistant Coordinator of the High School Summer Research Program at UCLA, mentoring 280 high school students.

Dr. Leslie Hopkinson (PhD ’09) was awarded the BSE Outstanding Recent Graduate Alumni Award. This award recognizes alumni who have received a graduate degree in BSE in the last 10 years. Hopkinson is an Associate Professor in West Virginia University’s Department of Civil and Environmental Engineering. Her research focus is streambank stability, vegetation-fluid interactions, environmental hydraulics, watershed management, and surface hydrology. Her research has been supported by agencies such as the U.S. Department of Energy, the U.S. Geological Survey, the Office of Surface Mining Reclamation and Enforcement, and the West Virginia Division of Highways. Ten MS and two PhD students have graduated from her research group, and she currently mentors four graduate students. She has published 15 journal articles in the areas of environmental fluid mechanics, mining reclamation, right-of-way reclamation, and watershed monitoring. She teaches courses in fluid mechanics, hydrology, and water resources engineering. She has been recognized with one College and five Departmental teaching awards. Her service contributions were acknowledged with an Outstanding Manuscript Reviewer Recognition by ASABE in 2013.

Are you a BSE Alumni with an entrepreneurial story to share? We’d love to feature your experience in a future newsletter! Please contact the department (mclark5@vt.edu, mlwolfe@vt.edu) if you would like to contribute.

Outstanding BSE Alumni
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BSE 2017 Spring Commencement Reception