

# ENGINEERING & TECHNOLOGY TIMES

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News and Notes from the College of Engineering and Technology

Dedicated to Student Success, Academic Excellence, and Advancement in Research



## HAAS IN THE HIGH BAY

**New equipment trains students for future of manufacturing**

East Carolina University's College of Engineering and Technology has officially launched the first phase of an effort to create a unique advanced manufacturing lab in the high bay of the Science and Technology Building.

Former Chancellor Cecil Staton and Dr. Harry Ploehn, the college's dean, laid out their vision for the facility during a ribbon-cutting ceremony on Monday, Feb. 11, during which students and industry representatives demonstrated the use of two new Haas computer numerical control (CNC) lathes and two Haas CNC mills, which were funded in part by a \$100,000 contribution from the Wells Fargo Foundation.

Staton said that opening the advanced manufacturing lab and equipping it with state-of-the-art manufacturing tools provides a tangible example of how ECU is fulfilling the three commitments of its strategic plan.

"We are maximizing student success by providing our students with coursework and STEM (science, technology, engineering and math) degrees, including hands-on experience with these machines, that translate directly into high-paying jobs and fulfilling careers in eastern North Carolina," he said. The lab will also serve the public and lead regional transformation by developing a highly skilled workforce for the region and

providing a collaborative space for industry partners to develop new products and manufacturing processes, he added.

"Wells Fargo is proud to continue our support for East Carolina University and their efforts to create cutting edge facilities that will help prepare their students for success," said Thomas Cline, region bank president for Wells Fargo and an ECU graduate. "We share the belief that supporting education is one of the most important investments we can make in our country's future. We know the return on an investment in a great education far exceeds those from the best mutual funds."



*Industrial Engineering Technology professor Dr. Sharon Rouse explains the controls of one of the Haas CNC machines during a class in the high bay at ECU's Science and Technology Building. (Photo by Rhett Butler)*

The Haas CNC machines are only the first step toward the ultimate goal of creating an integrated advanced manufacturing space in combining robotics, 3D printing, production line and warehousing technologies - and the cybersecurity necessary to ensure the integrity of internet-connected manufacturing operations.

We want ECU to be the school that people talk about when they think advanced manufacturing, especially with regard to cybersecurity protection," said Dr. Tijjani Mohammed, chair of the Department of Technology Systems. "This space represents the first step in creating a complete environment for education and workforce development in advanced manufacturing. We will not only graduate students with a unique skill set, but also serve as a resource for regional manufacturing companies to come for advanced training, project development and collaboration with faculty and students."

Ploehn pointed out that ECU has already been recognized by the National Security Agency as a leader in cybersecurity education for more than 14 years.

"By integrating our established strength in cybersecurity education and training with this new advanced manufacturing initiative, we will help our graduates and industry partners address one of

## HAAS In the High Bay...(cont'd)

the greatest concerns facing advanced manufacturing: the cybersecurity of internet-connected manufacturing processes, and the security and integrity of manufacturing process data and intellectual property," he said. "We expect that ECU will become recognized as one of the nation's leaders in cybersecurity for advanced manufacturing."

The College of Engineering and Technology is forming an advanced manufacturing advisory board to help the college understand the industry's needs

and provide advice on future investments in equipment and educational programs, Ploehn said. "Our industry partners, now and in the future, need engineers, technologists and computer scientists with not only a solid theoretical foundation, but also practical hands-on experience with cutting-edge advanced manufacturing technology."

The new machines unveiled on Monday represent ECU's commitment to providing that workforce of the future, he said.



Sean Wear, a junior in the technology systems program, demonstrates the operation of a CNC mill. (Photo by Cliff Hollis)

## Concrete Solutions

### Project tests concrete mixes using recycled materials

An East Carolina University construction management professor and a local construction company have teamed up in search of a solution to a problem facing the North Carolina Department of Transportation (NCDOT).

The NCDOT's State Transportation Improvement Plan identifies approximately 100 bridges and more than 700 miles of roadways in eastern North Carolina's 28 counties that need to be rebuilt within the next 10 years.

"That means a lot of concrete will be used," said Dr. George Wang. "And this area has a lack of quality aggregate, the crushed stone used for infrastructure."

Concrete is a composite material – a mixture of fine and coarse aggregate bonded with cement. In some cases, he said, contractors drive to quarries 100 miles west to get the material they need. That means time, fuel, emissions, and wear and tear on vehicles and roadways, so the NCDOT was interested in researching alternative formulations for concrete that would be more sustainable.

"The use of recycled concrete is not a new concept for the industry," said Brian Hunter, state laboratory operations manager for NCDOT's Materials and Tests Unit. "The recycled concrete will be crushed down to meet certain gradations and used as a portion of the aggregate in the mix. Using the recycled concrete aggregate will help to conserve valuable resources, reduce air pollution from the production of and transportation of natural aggregate, and reduce the amount of material going to landfills."

Some states – currently about 10, Wang said – already allow the use of recycled aggregate (old concrete) to make new concrete.



The Department of Construction Management's Dr. George Wang is researching the feasibility of using recycled concrete and other alternative materials to make new concrete. (Photo by Cliff Hollis)

Before the NCDOT can follow suit and start to use the material in structural applications, "research must be done to determine any negative effects that may be caused," Hunter said. "They also need to determine how feasible it will be to maintain enough stockpiles of quality material."

Wang submitted a research proposal in 2015 and was awarded the project in 2016.

Since then, with assistance from industry partner S.T. Wooten Corporation, he has been testing concrete composed of varying ratios of recycled aggregate and steel slag, a byproduct of steel production.

The testing was labor intensive, with large amounts of material that had to be crushed and screened, and then cast into cylinders with varying compositions for physical and chemical testing. Wang was there in person when an aging bridge was demolished.

"We crushed the material and removed the rebar reinforcement," Wang said. "Then we brought it to the lab to sieve it and separate the fine and coarse material."

The new mixes were tested for strength, brittleness and slump (a measure of the consistency and workability of freshly made concrete), as well as for contamination and leaching. Further testing for long-term

strength was conducted at seven-, 28- and 90-day intervals.

"The results are very good," Wang said. "Blending those recycled materials together makes a better-quality material."

Graduate student Hang Ding was invaluable to the project, as was the participation of S.T. Wooten and the use of its concrete lab in Garner. The industry partnership allowed access to equipment and materials that Wang said he wouldn't have had otherwise.

"It's important for us as faculty to collaborate with industry. It's good for the students' education and for faculty research," Wang said.

Robert Poole, quality control manager for S.T. Wooten, said, "It's a win-win for everyone involved when an industry opens its doors to help the local universities. [It] helps students understand and apply the information they are gaining from the classroom."

The final report on the project has now been submitted to the NCDOT, and Wang said he is optimistic that the agency will update its specifications to allow the use of the recycled material, providing a new solution for a significant problem facing the state in its effort to maintain and upgrade bridges, roadways and other infrastructure.

## Arctic Adventure

### Professor deploying snow sensors developed at ECU

Snow sensors developed by students and faculty at East Carolina University to aid in climate change research will soon make their way to the Arctic with Dr. Dan Dickerson.

Dickerson, an ECU science education professor and STEM CoRE coordinator, will work with seven other researchers in Utiagvik (formerly Barrow), the northernmost city in Alaska, March 30 through April 6.

Dickerson, along with ECU Department of Engineering faculty member Dr. Zhen Zhu and his students, developed the sensors researchers will deploy to help measure snow melt in the Arctic.

"We will travel 20 miles outside Utiagvik to deploy the sensor prototypes. Basically they will help measure how much melting is occurring in the Arctic over a period of time," Dickerson said.

He is traveling with researchers from Old Dominion University and the University of Washington who are studying climate change. Dickerson was approached by his colleagues at ODU to help build sensors that could measure the snow melt but were small and economic.

Dickerson said it may seem that a simple measuring device like a ruler could be used for measuring snow, but this device measures how much is melting on top and under the snow, and can be left for extended periods of time.

While Dickerson provided the parameters needed for the sensors for scientific purposes, ECU engineering students made his vision into an actual product.

The students developed the design and

coding for the sensors, which measure water as the snow melts. The students faced several challenges including making sure the sensor would work in the extreme temperatures of the Arctic, creating a device that is small and economical, and determining how to get the sensor to work with WiFi. It took the students approximately three months to develop the sensor.

Senior biomedical engineering student Robert Ocampo was one of the students who helped create the prototype. He said it feels amazing to have something he's helped develop go to the Arctic as part of a research project.

"I feel like everything I've learned throughout my schooling has all culminated to this. It feels great," said Ocampo.

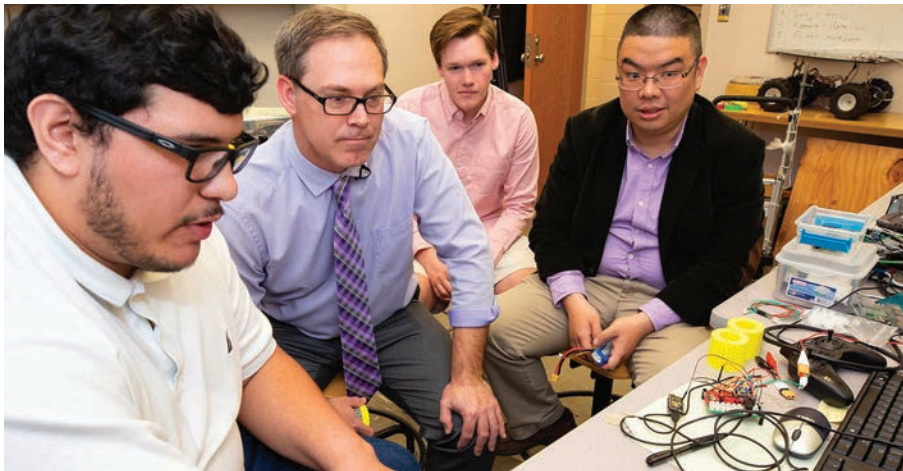
Ocampo along with electrical engineering students in ECU's chapter of the Institute of Electrical and Electronics Engineers worked together to develop the snow sensors.

Zhu said the job of the engineers was to develop a low-power data collection system based on hardware the students could build and program. The sensors had to be able to send the data to storage for collection later by scientists and send the information remotely.

"It gives them hands-on experiences. More importantly this is a real scientific project; this is not a class project, not a lab assignment. This is a real thing – they are contributing to real science so it gives them a sense of ownership of their work," said Zhu.

Dickerson said if these sensors perform well, it could provide a low-cost solution for researchers.

Follow ECU's social media accounts to journey with Dickerson during his Arctic adventure.



ECU senior Robert Ocampo (left) shows Dr. Dan Dickerson how to retrieve data from the sensors. Also pictured (from left) are freshman Ethan Smith and Dr. Zhen Zhu. (Photo by Rhett Butler)

## Franklin nabs prize in essay contest



Construction management student Joseph Franklin was selected by the Associated General Contractors Education and Research Foundation as the winner of its annual

Allhands Essay Competition. Franklin traveled to the AGC convention in Denver in April and earned a \$1,000 cash prize for himself and \$500 for his faculty advisor, Bryan Wheeler. Franklin's essay addressed the issue of attracting and retaining top employees in the construction industry.

"My focus was that by placing proper value on an employee's contribution in the workplace/field, that good retention would follow," Franklin said. "This is important to me as I am about to enter the construction field as a new employee and believe that my work is valuable. All employees contribute to companies to provide a good product or service and should be compensated and recognized in a variety of ways that focus on extrinsic as well as intrinsic needs. I believe that by doing this, companies can attract and retain top employees."

Franklin wrote the essay for Wheeler's class on construction quality and human resource management.

"I am absolutely thrilled and very excited for Joseph," Wheeler said. "He is the first student to win this competition in my 12 years of teaching at ECU. Joseph is an outstanding student, and his attention to detail and research of this topic were instrumental in winning the competition."

Franklin, who returned to school for his construction management degree after 15 years as a pastor, said traveling to the national construction conference was a first for him. Some of the prize money was used so that his wife could travel with him, he said.

"I hope that I will be introduced to some of the top construction companies in the country as well as meet with some of the leading construction managers and owners," he said.



## Students design and build Baja buggy for national competition

Even in high school, Evan Diener was interested in building a Baja buggy.

"I had seen this program at other colleges, and it was something I was really interested in," he said. "I had heard that ECU had done it in the past, but that was about the extent of it."

Dr. Tarek Abdel-Salam, engineering professor and director of ECU's Center for Sustainable Energy and Environmental Engineering (CSE3), even has an email from Diener – before he ever enrolled – asking how he could get involved in the project.

There had been a Baja team at ECU that competed in a collegiate design series sponsored by the Society of Automotive Engineers (SAE) Foundation for three years, but it had been inactive for eight. That didn't stop Diener.

"I got involved with the American Society of Mechanical Engineers my freshman year and participated in three years' worth of smaller student design competitions," he said. "We did a human-powered vehicle competition two years in a row, and then Andrew (Grena) and I both participated in a Mars rover competition."

That rover team took third place out of 120 teams last year in a global competition sponsored by NASA.

Diener, a mechanical engineering student, continued to remind Salam that he wanted to bring the Baja program back, but finding funding and space was a challenge. Eventually, a combination of funding from CSE3, the Department of Engineering and the Student Government Association allowed the project to move forward – but it was on a shoestring budget compared to the programs it was competing against.

For the Baja SAE competition, each team uses the same Briggs & Stratton engine (think lawn mower or go-cart) limited to the same speed and designs a buggy around it. If the buggy passes inspection – no easy feat, it turns out – the team can participate in a set of four dynamic events and an endurance race. None of the three previous teams from ECU had passed the technical

inspection, Salam said, so that was his goal for this year's team.

During the fall 2018 semester, the team set to designing a buggy in a small caged area in the high bay of the Science and Technology Building. More than 20 students helped along the way, including the dedicated core group that kept things moving forward.

And so in April, five team members, along with Salam, arrived in Tennessee with a buggy in a 6-by-12 trailer, the smallest by far of the rigs in the parking lot. Other teams had semi-truck trailers emblazoned with their logos and filled with equipment.

The dynamic events included a sled pull, acceleration, suspension and traction, and maneuverability. And then there was the endurance race.

"Our objective in this build, this year, was durability and reliability," Diener said. "We wanted to pass tech and we wanted to be able to compete in the endurance race. And we wanted to be successful in the endurance race and be able to finish it. A lot of teams were getting dragged off the course within the first lap with a separated tie rod or a separated control arm joint, and the whole wheel was just dragging behind."

The black-and-purple buggy was designed with a robust suspension; Diener – who got to drive because he was the only team member who managed to unstrap himself and get out of the car in under 5 seconds as required by rule – said he never lifted his foot off the gas on the endurance course.

"We just pounded over everything, and the suspension just ate it," he said.

The course was brutal, with giant holes, trenches and other obstacles. "The objective is to take you out of the race," Diener said. "It was a torture test, and we learned a lot doing it."

The team didn't finish the race, which was condensed from four hours to two and a half due to a forecast of inclement weather, but the buggy lasted for more than 45 minutes before dropping out with drivetrain issues. The transmission belt started slipping, and the design didn't include a way to adjust the tension.

"On the bright side, we didn't have any mechanical failures, any shearing or breakages," Diener said. "Where other teams were getting dragged off the track, we were just rolling past them. So that was rewarding."

Diener graduated last week, so next year's effort will be spearheaded by Grena, who said he's looking forward to building on this year's accomplishments.

"We'll up the ante just a little bit," Grena said. Salam said he also hopes this year's effort will help generate more support.

"I'm really excited because as a small team with limited resources ... they proved to be real engineers," he said. "Teamwork is part of what I teach here, and they did excellent work as a team."

Follow the team's efforts on Facebook at @ECUmotorsports.



The ECU Baja team traveled to Cookeville, Tennessee, to participate in a national competition featuring 100 collegiate teams. Pictured from left are Christian Dowell, Andrew Grena, Landon Sugar, Evan Diener, Christopher Helberg and Dr. Tarek Abdel-Salam.

## Engineering student tackles problem of plastic waste



Grace Krell

It takes a special kind of person to not only see a problem as a challenge to be addressed, but to take action to do something about it.

Freshman engineering student Grace Krell is doing just that. She has created a business called SweetSip to market stainless steel straws to help combat the issue of plastic waste. The straws, she said, "are affordable, stylish, and provide the first step towards saving our oceans."

By introducing people to small changes like reusable straws, she hopes to encourage them to change other habits, like switching to reusable shopping bags.

"The straw is small but mighty," she said.

Krell, a member of the ECU Honors College Class of 2022 and a recipient of the EC Scholars Award, pitched her idea during the second annual Pirate Entrepreneurship Challenge, a competition in which more

than 90 student-led teams presented startup business ideas. SweetSip finished as the runner-up in the competition, earning Krell \$10,000 in funding support as well as business mentoring, branding help and legal consultation.

"Competing in the PEC changed SweetSip entirely," Krell said. "When starting the challenge, I was lost, didn't know what the difference between "revenue" and "profit" was, and couldn't see the potential of my business.

"Through the connections I have made during this challenge, I was able to craft my pitch and learn my business like the back of my hand. I now have the confidence to pitch SweetSip to others, and this has paid off."

The experience and the boost in confidence helped her land multiple deals, she said, including one with Dowdy Student Stores. She plans to continue to expand the business through advertising

and eventually add other product lines like bamboo, silicone and glass straws, as well as better packaging.

"I now have a vision for what SweetSip can become and am so excited to hit these milestones," she said. "I want to brand this business so that it becomes the largest reusable straw company in America."

Krell said the support of her family, as well as her friend Taylor Hicks, who won the inaugural PEC, has been invaluable. Help from the Miller School of Entrepreneurship and from Steven Jacobs of the Small Business and Technology

Development Center helped her prepare to pitch the business to others.

"Without all these people and many more, SweetSip would be nowhere close to where it is today," Krell said.

**SweetSip is online at <http://sweetsipstraws.com/> and on Instagram and Facebook**



## Meet CET's Brad Collier



Brad Collier

**Official title:**  
Assistant Director of First Year and Transitional Programs  
**Hometown:**  
Goldsboro, N.C.

**Where did you work prior to coming to the College?** Wayne Community College

**What will you be doing for the College?** Overseeing programming for first year intended majors, facilitate the CREATE LLC and the peer mentor program.

**Why did you choose to come to ECU?** I attended ECU and I live in Greenville. I've been wanting to get back on campus to work and help our future Pirates!

**What would people be surprised to learn about you?** I taught cake decorating while I was in graduate school and I am the organist at First Presbyterian Church here in Greenville.

## Engineering students space out

Six ECU engineering students participated in the inaugural N.C. Space Symposium hosted by N.C. Space Grant, a consortium of universities in North Carolina that support aerospace education and research, in partnership with NASA and industry.

The event was held April 4-5 at N.C. State University in Raleigh.

ECU students presenting posters included:

**Samson Goodrich** - Automated impact device for evaluating a prototype ultrasensitive mass detector

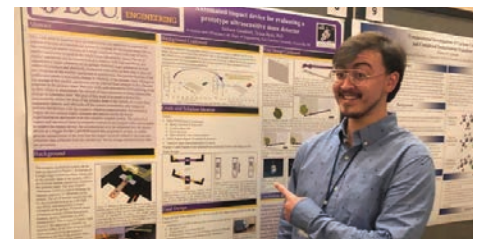
**Julian Quintero-Rivera** - Evaluation of UAV Atmospheric Sensor Configurations on Satellite Signal Acquisition

**Mariah Mook** - Evaluation of Coupled Cantilevers for Mass Detection

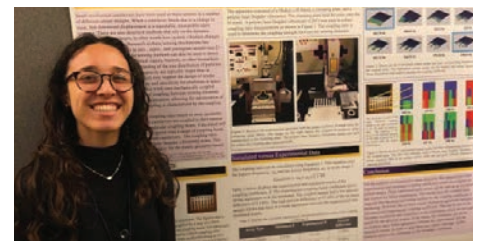
**Andrew Grena and Evan Diener** - Representing ECU NASA Rover Challenge team

**Angela Krebs** - Analytical Model of Ocean Energy: Determining Peak Energy Level Potential

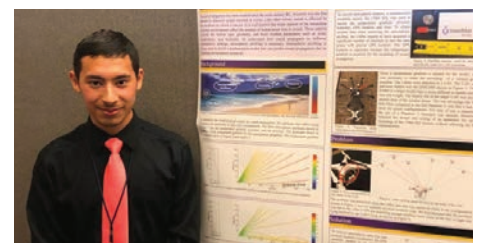
To learn more about the event or their poster presentations, visit <https://ncspacegrant.ncsu.edu/events/2019-space-symposium/>.



Samson Goodrich



Mariah Mook



Julian Quintero-Rivera

## Cellink Demonstrates 3D Bioprinter

Students and faculty in East Carolina University's College of Engineering and Technology had the chance to see and discuss the operation of a 3D bioprinter, technology that could lead to the printing of viable human organs.

Dr. Barbara Muller-Borer, chair of the Department of Engineering, said the possibilities of the technology are fascinating. She pointed to the research of Dr. Anthony Atala, who has used a similar process to print a prototype of a kidney at Wake Forest University.

The CELLINK Bio X is a standalone 3D bioprinter that is designed for user friendliness, allowing the possibility of hands-on student use. It looks and operates much like a normal 3D printer but uses soft materials and cells instead of plastic.

"It was neat to see how simple it is to use and how easy it would be to integrate with our other 3D printing systems, and let the students learn about this technology," she said.

Daniel Lidberg, CELLINK Nordic sales director, along with Zack Graham, sales executive, pulled the printer out of the box and set it up for printing within a few minutes. The device can be interfaced with a computer or operated directly from the integrated touchscreen.

Lidberg said he's eager to spread the word about bioprinting and the newest advances and equipment in the field.

"Since it's a new technology, not a lot of people have been doing it," he said. "More and more need to do it to move the research further."



Representatives from CELLINK demonstrated the use of a 3D bioprinter for students and faculty in the College of Engineering and Technology. (Photos by Cliff Hollis)

Labs around the world are using 3D bioprinters in rapidly advancing ways, he said. Structures printed with biocompatible materials can be infused with living cell cultures that can then grow and survive for weeks.

"What we can do today is to minimize animal testing by printing a 3D cell culture (that can be used in research)," he said. "What we can't do today is print a full organ, but we can print a soft tissue model."



The printer uses bioinks to create structures infused with living cells.

For the demonstration, Lidberg and Graham printed a model of an ear at 35-percent scale, which took only a few minutes. Lidberg said that printing an organ like skin could be possible within a few years, while denser and more complex organs will take longer.

"We've only reached the tip of the iceberg at this point," Graham said.

Muller-Borer said she was interested in how the device could be used to teach students about the newest in biomedical technology.

"This is where a lot of personalized medicine is going now," she said. "From a teaching standpoint, if you wanted to have students use it, how student-proof is it? ... The touch screen looks like it's easy to use; it's easy to clean."

Tomorrow's students may print organs as easily as today's students print a model of the cupola, she said.

## IDIS students partner with Fastenal, Thermo Fisher Scientific for service-learning project

Students in the Industrial Distribution and Logistics (IDIS) program spent the semester working on a service-learning project with two local industry partners. Fastenal, a leading industrial distribution company, operates a vendor managed inventory (VMI) operation within the Greenville facility of Thermo Fisher Scientific, a world-class pharma manufacturing company. The VMI houses over 15,000 part numbers, valued at approximately \$20 million.

Thermo Fisher uses the same SAP enterprise software taught within the IDIS

curriculum, providing students a valuable, real-world warehouse and inventory control experience. Shamar Williams, a student in the IDIS 3850 Warehousing and Distribution course, said, "Working inside Fastenal gave me the hands-on experience to understand how cycle counting and inventory analysis affects a company in the real world."

Students working in teams of two were tasked with conducting on-site, physical inventory counting within the Fastenal VMI. During the semester, students counted over 5,400 unique part numbers with a counting accuracy over 96 percent. This

accuracy is remarkable considering the compressed on-site time (to match their lab class) and lack of familiarity with the product. In total, each student contributed 4-6 hours at the Thermo Fisher plant working under the supervision of Matt Moore, district manager for Fastenal, and Edward Byrne, general manager for the Fastenal-Thermo Fisher Site. Both Moore and Byrne praised the students on their professionalism, hard work and dedication to the project. This is a true testament to our ECU students and the quality education delivered by the IDIS program.



Charly Tanner

## ICT student selected as first Red Hat Academy intern

Charly Tanner, a junior in the Information and Computer Technology program, has been selected as the first intern for the Red Hat Academy, a role he will assume in May 2019.

The Red Hat Academy provides curricula and support for almost 400 schools in North America and more than 1,000 globally to provide training and testing in Linux and open source technology.

"Charly will help us identify key areas in which we can maximize the program impact and effective delivery to the student learner," said Trisha Turlington, business development manager for Red Hat Academy. "This is a unique opportunity for Charly in that he will work alongside 200 other Red Hat interns in North America while gaining exposure to multiple areas of the business as he works with our Global Learning Services Team, Services Marketing Team and Curriculum Development."

Tanner said he's looking forward to seeing how what he's learned in the classroom is applied in the business environment.

"Red Hat as a company is basically a household name in my field of information technology; everyone knows who they are and what they do," he said. "By taking this opportunity, I hope I am able to establish a strong professional identity and learn more about how such a massive company operates."

Turlington said Tanner's participation in cyber competitions and in leading the rebranding and development of ECU's gaming club helped him stand out from other candidates for the internship.

"Charly's passion to continually learn new technologies and get engaged in new programs within his time at ECU really impressed us," she said. "He wasn't afraid to start something new and change direction of existing programs to ensure their optimal success."

Tanner, who learned about the internship through Lee Toderick, technology systems teaching instructor, agreed that the competitions have helped build on strategies and theories learned in the classroom.

"In preparation for many cyber competitions, I've been able to expand on things learned in my classes and many times I've implemented them from scratch in my own environments," he said. "While doing this you have to do a lot of your own research and you end up learning about more than you set out to."

As an officer of the gaming club, he has served on a committee whose goal is to improve the recreation options offered in ECU's student centers.

"It's all about engaging students, and that's what Red Hat wants me to do with this internship," he said.

## ECU team wins Best Health Related Hack

On Feb. 16-17, members of WiCS (Women in Computer Science) and ACM (Association for Computing Machinery) attended an organized visit to IBM's campus in RTP and also attended a hackathon for women and nonbinary individuals at UNC Chapel Hill called PearlHacks.

The team consisting of Tiffany Nguyen, Riley Valencia, Lilah El-Halabi and Seymone Gugneja developed HealthHelp, an AI chatbot that uses Amazon Lex and the Google Translate API to help immigrant populations overcome barriers in access to healthcare. The team presented its project and won the award sponsored by Optum for Best Health Related Hack at PearlHacks. They were also able to network with mentors from Optum.



## Downes named Rising Star of railroading



Landon Downes

Landon Downes, a 2011 graduate of the Construction Management program and a current student in the Master of Construction Management program, has been named one of 2019's Rising Stars

by Progressive Railroading.

This is the seventh year that Progressive Railroading has sponsored the Rising Stars Awards program. The magazine defines a Rising Star as someone under the age of 40 who has made, or is making, a positive impact on his or her company, organization, department or team, and is viewed by others – peers, colleagues, supervisors, clients or associates – as an up-and-coming leader in the rail industry.

Downes has worked with Balfour Beatty Rail (BBR) since 2011 and is now an assistant project manager, currently working on the Blue Line Extension Project in Charlotte, where BBR is building a 9.3-mile light rail extension, as the track and systems contractor.

Downes said the construction management program at ECU provided him with an understanding of construction management fundamentals and equipped him with the leadership skills to pursue a career in the construction industry.

"I was most impacted by working in a group setting, and utilizing each teammate's skills through effective communication to solve a problem," he said. "As my career has progressed you quickly understand the construction industry is a team environment."

"We are extremely proud of Landon's achievements," said Dr. Syed Ahmed, chair of the Department of Construction Management. "Outstanding students like him bring great recognition to the department, college and the university."

For more information visit <https://www.progressiverailroading.com/people/news/Progressive-Railroading-names-25-Rising-Stars-for-2019-57338>.

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## SWE Gala raises funds for STEM education

The Society of Women Engineers (SWE) hosted its first fundraising gala on Friday, April 5. With support from the American Society of Safety Professionals (ASSP), the Biomedical Engineering Society (BMES), Institute of Electrical and Electronics Engineers (IEEE), National Society of Black Engineers (NSBE), and Women in Computer Science (WiCS), SWE hosted the event to benefit young STEM students within the Pitt County School System.

The gala raised \$3,458 and was attended by more than 100 guests. Speakers Dr. Michelle Oyen, Cayla Wilson and Kelsey Law spoke about their experiences and their passion for STEM education.

"STEM education is a topic that, as engineering and technology students, we are all passionate about and work to promote in any way we can," said Antonia Dingeman, SWE vice president. "In order to support the efforts of our local community in providing younger students with meaningful experiences through STEM programs, we decided to take action

to support one such program financially while also hosting a night of celebration, community and networking. SWE worked with Ann McClung, an ECU employee at the Center for STEM Education, to help promote STEM education across Pitt County by partnering with Pitt County Robotics and SWENext to promote STEM at the local boys and girls club."

The Gala was organized and hosted by about 20 active members from SWE, ASSP, BMES, IEEE, NSBE and WiCS over a four-month period.

"The SWE executive board members are truly thankful for the volunteers' commitment and hard work to host such a successful event," Dingeman said. "Our hope is for the Fundraising Gala to become an annual event that, over time, we can grow to a major event that reaches and includes many more students and faculty."

She added that the event provides an opportunity to promote CET to current high school students.

"The younger generations need to be influenced to pursue majors in the STEM field to influence the future," she said. "We would like to thank all of our sponsors including Dr. Barbara Muller-Borer and Mr. Michael Borer, Thrivent Financial, ECU's provost, Jon and Wanda Yuhas, Rivers and Associates Inc., ECU Acoustics and Vibrations Lab, The Roberts Company, Tracy Dingeman, Dr. Harry J. Ploehn, Evelyn Brown, Dr. LaKeshia Alston Forbes, Greenville Glass Company, Melonie Bryan, Ann McClung, and Cathy and Janice Williams."



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