ECU

ENGINEERING & TECHNOLOGY TIMES

FALL 2018

News and Notes from the College of Engineering and Technology

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

Computer Science alumnus wins IBM's Call for Code Challenge

Thanks to skills acquired as an East Carolina University computer science graduate, access to resources that encourage innovation, and mentorship and business planning from the Miller School of Entrepreneurship, Magus Pereira is one step closer to being a true social innovator.

Computer science '18 alumnus Magus Pereira, far right, was part of a team that won IBM's first Call for Code Challenge, a competition whose inaugural theme focused on natural disaster preparedness and relief. The winning team also included, pictured left to right, Taraqur Rahman, Bryan Knouse and Nick Feuer. (Photo by Call for Code)

Pereira, along with his team which included four innovators from across the United States, walked across the Regency Ballroom stage in San Francisco Oct. 29, 2018, and won the first global Call for Code Challenge for their solution to keeping people connected during a natural disaster named Project OWL, "Organization, Whereabouts and Logistics."

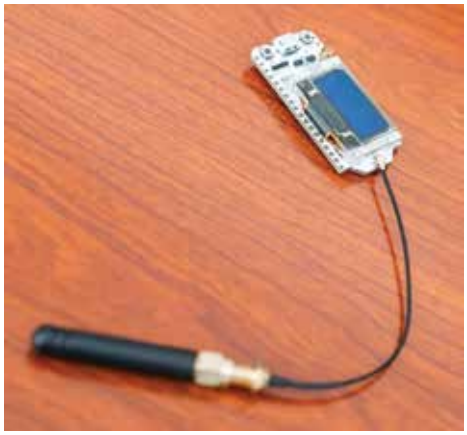
Project OWL's, team which includes Pereira, Charlie Evans, Nicholas Feuer, Bryan Knouse (team lead) and Taraqur Rahman, won $200,000 in cash prizes, product development by IBM and the opportunity to pitch OWL to venture capitalist firm NEA for potential funding. Judges for the competition included former President Bill Clinton and Jim Zemlin, Executive Director, The Linux Foundation.

Project OWL is a two-part hardware/software solution. It provides a communication infrastructure that gives first responders a simple way for managing all aspects of a disaster.

The devices resemble rubber ducks and can float in flooded areas if needed. The physical "ClusterDuck" network is made of hubs – DuckLinks, MamaDuck and PapaDuck – that create a mesh network that makes it possible for people to use their existing mobile phones or other devices to communicate with first responders. It can use systems like Alexa and Facebook Messenger to send lifesaving information even without a robust internet connection.

"Once this network of Ducks is deployed and then clustered, civilians are able to basically get on the devices through a really intuitive interface and contact first responders with a list of things that are really essential to them," Pereira said.

This application, the OWL software incident management system, uses predictive analytics and multiple data sources to build a dashboard for first responders.



The hardware behind the award-winning Project Owl. (Photo provided by Cliff Hollis)

Over 100,000 developers and data scientists from 156 nations participated in the Call for Code Challenge, creating more than 2,500 applications. In addition to Clinton and Zemlin, other judges for the competition included Kate Gilmore, United Nations Deputy High Commissioner for Human Rights; Dr. Irwin Redlener, Director of National Center for Disaster Preparedness at the Earth Institute of Columbia University; Deborah Dugan, Chief Executive Officer, (RED); and Grace Kim, Design and Research Lead at Twitter.

Pereira says his ClusterDuck idea came about while attending a makeathon in 2017 on ECU's campus. The makeathon, sponsored by ECU's Innovation Design Lab, wanted to address the disaster relief efforts that were taking place during the then-recent hurricanes.

"ClusterDuck wasn't even my first idea," said Pereira. "It was an idea called HexHale bins, hexagonal recycling bins for post-disaster clean up. I didn't see it being impactful so (I) scrapped (sic) and ideated what is now ClusterDuck."

From there Pereira began to take his ClusterDuck idea out to the ECU community. To make the concept stronger, he sought input from ECU's Office of Innovation and New Ventures, participated in Greenville-area pitch competitions and worked with other like-minded students in several student organizations.

He also leaned on the resources available in the Miller School of Entrepreneurship, where he worked with faculty on the ideation of ClusterDuck, its business plans and the business model canvas. The inaugural Pirate Entrepreneurship Challenge (PEC), established by the Miller School, offered Pereira another opportunity to pitch ClusterDuck; it advanced to the final round of the competition.

Continued on page 2

Alumnus wins IBM's Call for Code Challenge...(con'd)

Pereira took advantage of additional pitch opportunities available through the Miller School. He pitched ClusterDuck to one of the school's advisory boards, where he was encouraged and received constructive criticism.

Pereira speaks to Dr. Qin Ding about his Call for Code experience. (Photo provided by Cliff Hollis)

Then, based on the progress made from Pereira's first pitch to the PEC, the Miller School sponsored his participation in Texas Christian University's (TCU) Richards Barrentine Values and Ventures® Competition.

"One of the services the Miller School provides is linking our future entrepreneurs with the right competition when it comes along," said Dr. Mike Harris, director of the Miller School of Entrepreneurship. "The TCU competition was another step to get him ready for Call for Code."

Along with applicable knowledge, curriculum and opportunities, the Miller School also provided Pereira with morale support. After failing to win early competitions, and preparing for his graduation, Pereira thought about shutting down his ClusterDuck idea.

"I was beginning to shift slightly and transition to another idea, but I was encouraged to keep working on ClusterDuck … took advise and criticisms from my prior competitions. Then I found the Call for Code competition," said Pereira. "I fixed and made revisions for this competition."

Twenty-four hours before the Call for Code award announcement, Pereira met his team for the very first time. Four months prior, after learning about the Call for Code competition, he had reached out on Slack, a virtual, collaborative workspace, to find possible team members with similar aspirations to be social innovators. There, he first met team member Knouse, who led the development of the software dashboard/incident management system, complementing Pereira's hardware capabilities. The team eventually grew to five. Each team member brought their strengths together, and from this collaboration, OWL was born.

Now, the team is on the verge of introducing a product that can save lives during a natural disaster.

Pereira believes his success so far was made possible by the skillsets he learned while in ECU's department of computer science and by getting involved outside the classroom. He believes others could do the same.

"Take your skill sets and get involved," Pereira advises future students. "You have all this support available to you (at ECU), and there are a lot of creative minds around you. It's a win-win situation."

Pereira speaks to Dr. Qin Ding about his Call for Code experience. (Photo provided by Cliff Hollis)

"We are so proud to see our student win such a significant competition at the national level," said Dr. Qin Ding, ECU associate professor in computer science. Ding had Pereira in two of her classes and was the founder and advisor for the Association of Computing Machinery, of which Pereira was a member. "It (Call for Code win) has also demonstrated that the education we provided for our students has prepared them well."

"Magus has demonstrated imagination and creativity in using his computer science education to find an innovative solution to a challenging problem," said Dr. Harry Ploehn, dean of ECU's College of Engineering and Technology. "I'm even more impressed by his determination and resourcefulness in using hackathons, the Pirate Entrepreneurship Challenge, and the IBM Call for Code contest to turn his innovation into successful entrepreneurship. What Magus has accomplished is truly remarkable and shows that we're on the right track with our innovation and entrepreneurship initiatives here at ECU."

Pereira said it was Project OWL's goal to deploy the product before the next natural disaster.

Pereira is the first Miller School of Entrepreneurship alumnus to win a major national competition.

CET Dean Harry Ploehn, left, with Magus Pereira. (Photo provided by Cliff Hollis)

Wang Named ASCE Fellow

Dr. George Wang

Dr. George Wang, professor in the College's Department of Construction Management, has recently been elected a Fellow of the American Society of Civil Engineers (ASCE). Dr. Wang has been a member of ASCE for 15 years and is currently the secretary of the ASCE Committee on Ethical Practice. He also has been actively involved with other technical committees.

Wang has been recognized by the ASCE for his significant contribution to recycled materials use in infrastructure construction and ethical practice in civil engineering.

Help us congratulate Dr. Wang!

Message from the Dean

Harry Ploehn, Dean College of Engineering and Technology

As I reflect on 2018 and prepare for 2019 and beyond, it's hard to believe I've served as dean for over 18 months – going on two years! So much has changed for my family and me: jobs, homes, schools, and (recently) all that goes with being "empty nesters." Thankfully, I see one thing that has remained unchanged: the deep commitment of our faculty and staff to student success. Evidence of this commitment was apparent early on, as I reviewed the college's website before my job interview, and strongly reinforced as I met with faculty during my interview visits. Our shared commitment to student success is what drew me to ECU. I'm thankful and energized every day because everything I've seen and learned over the last 18 months has confirmed that I made the right decision!

Of course, the last 18 months haven't been without challenges and difficulties. My challenge as dean has been to reconcile and align three sets of values and priorities: those of the ECU administration, those of our faculty and staff, and of course, my own values and priorities. As we updated our college strategic plan, I proposed three college priorities to guide our investments of time and energy: maximize student success, enhance academic excellence, and advance research and scholarship. That all reads nicely on paper and sounds great, but what does that mean in the real world – where there's never enough time or funding to do everything that everyone expects us to do?

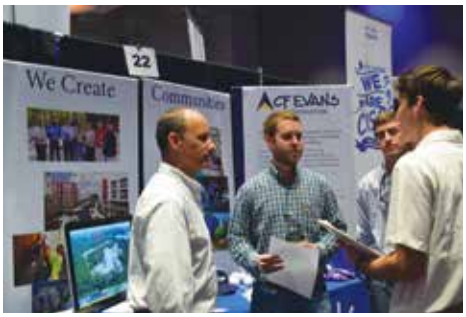
The most important thing I've figured out is that "maximizing student success" can't just be one of our priorities – it must be THE overarching priority that invigorates all that we do. As I struggle to balance "everything that everyone expects us to do," it helps me to think about maximizing student success in terms of now, later and forever.

Maximizing student success now means helping students get the most out of their years of enrollment at ECU. To help students now, we are transforming the Advising Center into a full-service CET Student Success Center that will integrate prospective student outreach and recruiting, a college-wide First-Year Program, AI-aided curricular and beyond-the-classroom advising, and a Career Development Program to grow student-industry engagement in internships and co-ops as well as help students find full-time employment. The First Year Program might be the single most urgent priority: more than ever, our new students need help to figure out who they are as adults, and coaching to help them discover career and degree pathways that really make sense for them.

We must also help students maximize their success later, as they embark on their careers. As an educator, I believe our product is the knowledge, skills and experience that our students gain from us and carry with them into their lives and careers. Students must receive from us the best possible "product" to help them achieve life-long success no matter where their career pathway leads them. In this context, enhancing academic excellence means working diligently on continuous improvement of our course offerings and teaching methods, not only to maintain accreditation, but to meet student and employer expectations for quality and value.

Finally, maximizing student success forever captures my hope that we're building lifelong bonds of mutual trust and loyalty with our graduates. I hope our graduates will turn to us for continuing education for themselves, for a quality education for their children, and for opportunities to invest their time, talent, or treasure for the benefit of future Pirates. Faculty and staff that prioritize student success, high-quality academic programs, and enriching beyond-the-classroom opportunities – these are the foundation of our strategy for maximizing student success now, later and forever.

Inaugural CET Career Fair sets high bar



ECU Career Services hosted the first College of Engineering and Technology Career Fair, an academically focused event, for ECU students and alumni to support networking for full-time, internship and co-op opportunities. The event was open to all engineering and technology majors and students interested in pursuing a career within these fields. Employer attendees represented both local and national organizations that offer employment opportunities for students.

ECU Career Services recorded an impressive number of both employers and student attendance during the fair, which was held at the Greenville Convention Center. Six hundred and twenty-one (621) students and alumni attended the event, and 142 attendees secured on-campus interviews. A total of 147 employers representing 23 industries were hosted at the career fair with 15 organizations conducting interviews the following day.

Employers included **Bridgestone Americas, Cisco, Domtar, Hyster Yale, GUC, T.A. Loving, Vidant Health and Honda**.

For more information about future events and career development resources, visit **http://www.ecu.edu/cs-cet/career.cfm.**

College names new engineering chair

Dr. Barbara Muller-Borer

ECU and the College of Engineering and Technology (CET) have announced that Dr. Barbara Muller-Borer has been named the chair of the CET's Department of Engineering.

"Barbara and I share a deep commitment to the success of students who come to ECU for engineering, as well as the life-long success of our graduates in their careers and communities," said CET Dean Harry Ploehn. "I'm looking forward to her leadership in sustaining that program's excellence and commitment to student access and student success."

Muller-Borer earned her MS and Ph.D. in biomedical engineering from the University of North Carolina at Chapel Hill. Her research focused on computational modeling of electrical signal propagation in normal and injured heart tissue. Before coming to ECU in 2004 as an assistant professor at the Brody School of Medicine (BSOM), she completed a postdoctoral fellowship in cardiovascular physiology and imaging at UNC-Chapel Hill in the Division of Cardiology. She was involved in several outreach initiatives with summer Research Experiences for Undergraduates programs and American Heart Association summer programs for high school students.

While in the BSOM, Muller-Borer established the Cell-based Therapies and Tissue Engineering Laboratory, where current research is focused on developing 3D cardiovascular tissue microenvironments to study cardiac and adult stem cell interactions. Her lab at ECU has provided mentoring and research opportunities to more than 33 undergraduate, graduate and medical students. She is a member of a team that established and serves as an advisor for the Cellular Analysis/Imaging Core facility in BSOM.

In 2012, Muller-Borer joined the Department of Engineering as an associate professor. She was instrumental in establishing CET's Master of Science in Biomedical Engineering program, which graduated its first class in December 2016.

She succeeds Dr. Hayden Griffin, who served as chair for nearly eight years.

"It is an honor and privilege to serve as chair of the Department of Engineering," said Muller-Borer. "It is an exciting time to be a part of the university, CET and the department. I look forward to working with Dean Ploehn, CET's leadership team and the engineering faculty to continue to maximize student success, enhance academic program excellence and advance research and scholarship."

Among her goals for the department, Muller-Borer will build upon the department's core values and sense of community to give undergraduate engineering students the support and attention needed to prepare them for success as they enter the engineering workforce. In addition, Muller-Borer will lead the department to further innovation in engineering education, expand industry support for senior capstone projects, and grow graduate research programs in biomedical and mechanical engineering. To do this, she plans to expand on and explore new, multidisciplinary, collaborative relationships for engineering faculty with researchers across the ECU campus and UNC System, as well as facilitate interactions with industry, business and public sector organizations across eastern North Carolina.

Dr. Muller-Borer with CET's first biomedical engineering graduating class.

The significance of being engineering's first female chair is not lost on Muller-Borer. She hopes her appointment will bring attention to the fact that women are underrepresented in the engineering field.

"To tackle this problem, we need to partner with K-12 schools, community colleges and employers to identify and provide solutions that make engineering education and careers more attractive to talented female students," added Muller-Borer.

Pounding the pavement

Recently, Alpha Eta Mu Beta, the College's National Biomedical Engineering Honor Society chapter, cleaned up its adopted street, which is 5th street from Reade to Elm. The clean up marked the chapter's first service activity this semester.

After two cleanups, the city will install a sign on 5th Street that will include the chapter's name and that 5th Street has been adopted by it.

Chapter members who participated in the clean up include Jason Schodt, Keith Williams, Victoria Myers, Josh Butler and Patricia Malcolm.

College announces new STEM-related degrees

Summer internships and research opportunities will be part of the new Bachelor of Science in Software Engineering program. (Photo by Cliff Hollis)

The College of Engineering and Technology (CET) announced three new degree programs: Bachelor of Science in Software Engineering (BSSE), Master of Science in Mechanical Engineering (MSME) and Master of Science in Data Science (MSDS).

"These new degrees reflect the college's commitment to maximizing student success and leading regional transformation," said Dr. Harry Ploehn, CET dean. "Software engineering, mechanical engineering and data science are high-demand fields. When we can provide graduates in these fields who want to live and work in our region, companies will come, grow and thrive here."

Dr. Tarek Abdel-Salam

The new BSSE degree will replace the current Bachelor of Arts in Computer Science, which the department has offered since 1972. It will apply engineering principles and proven industry practices to enable graduates to design, produce and validate large-scale, high-quality, secure software. Special features of the program include well-balanced coverage of theory and practice, and summer internship and research experiences.

The BSSE program will recruit high school seniors and community college transfer students who plan to enroll as full-time students. "Society's demand for fast, accurate and secure computing and software will continue to increase," said Ploehn. "ECU will provide the computer scientists and software engineers who will meet this demand."

The MSME degree is a research-oriented program that will focus on two areas – advanced energy systems and mechanics of biomaterials. Advanced energy systems include sustainable and efficient energy systems such as solar, wind and ocean-wave energy. Mechanics of biomaterials centers around the mechanical behavior of biological tissues, as well as materials for medical implants.

Graduates will gain advanced problem-solving and critical thinking skills to serve a wide range of industries and government organizations. This program will cater to those who have completed degrees in engineering, science and health care professions – and are looking for advanced knowledge and research skills needed to advance in their careers.

"This (MSME) new degree program aligns with key components of the ECU mission statement, which is to be a national model for student success and public service," said Dr. Tarek Abdel-Salam, an associate dean for CET. "ECU is the only university within the UNC System that offers academic programs in engineering, medicine, dentistry, nursing and allied health on one campus. The MSME program plans to take advantage of these strengths."

The MS in Data Science is an interdisciplinary degree program involving ECU's departments of computer science, health services and information management, mathematics and biostatistics. Features of the health-care-centric program include theory and practice of data science in the context of medicine and related health care professions, as well as strong industry involvement.

According to Dr. Venkat Gudivada, chair of CET's Department of Computer Science, the MSDS program will aim to produce data scientists who will be innovators in reducing health care costs and improving quality of care through big data-driven decision making.

"Data science refers to a set of new algorithms and approaches for advancing scientific discoveries and business innovation through big data," said Gudivada. "The knowledge and skills needed to analyze and interpret big data are quite different from those that are needed for small-scale datasets. Data scientists play a critical role in enabling organizations to improve their products, business processes and services using the data they collect."

Dr. Venkat Gudivada (Photo by Cliff Hollis)

The MSDS program will recruit students with an academic background in computing or other quantitative disciplines such as mathematics, statistics, physics, chemistry, engineering and epidemiology. Applicants must have a strong undergraduate preparation in mathematical and computational problem-solving. Students from disciplines other than computer science are required to complete two specially designed bridge courses before they begin the program. The program will be delivered using both online and face-to-face instruction. Thirty semester hours are required to earn the degree.

"Our students should be able to progress as high and as far as their ability and motivation will take them," said Ploehn. "That's why we're building more and better graduate and certificate programs, like the new MSME and MSDS degrees."

All three programs currently are accepting applications.

First engineering class celebrates 10-year anniversary

ECU's Department of Engineering recently celebrated the 10-year anniversary of its first graduating class. On hand to celebrate were faculty and students representing that class, including, left to right: Dr. Tarek Abdel-Salam (faculty emeritus), Dr. Paul Kauffman (faculty emeritus), Scott Dargan, Dustin Jones, Aaron Spencer, Stephen Dubrey, Josh Brown, Patrick Rhodes, Kyle Barnes, and Dr. Harry Ploehn (dean of the College of Engineering and Technology).

East Carolina University's Department of Engineering recently celebrated the 10-year anniversary of its first graduating class at the Greenville Convention Center.

Engineering alumni from as far away as Washington, D.C. joined current administration, faculty, staff and students and celebrated the donors and department friends who helped raise almost $25,000 in scholarship funds by attending the reunion.

Aaron Spencer is an alumnus of the first engineering graduating class and always saw himself as a Pirate when growing up. He considers himself a pioneer that "paved the way for everybody else. Progress has to have a starting point."

Aaron Spencer

Spencer is very proud of his alma mater and wants it to succeed. He supports his alma mater because he wants people to say 'wow' when he tells them he graduated from ECU. To do that, "I've got to have the success of the program to build and build for that to be said."

Plus, Spencer wants to set an example for future classes to give back. "We all have to invest in this (the engineering program). If we're going to continue to see growth and progress, we have to continue to invest back in to this program to get to the point where people are saying 'wow' when they learn where we graduated."

Dean Harry Ploehn

Dr. Harry Ploehn, dean of the College of Engineering and Technology, is among those who are impressed by the program's development over the last decade.

"I'm very proud of everyone's contribution to building the engineering program at ECU," said Ploehn. "I'm not only proud of the faculty and staff who created an excellent engineering curriculum from scratch, but also every graduate who has gone out into the workforce and proven the program's quality through their impact on their companies and communities. Well done!"

The department's inaugural graduating class had 22 graduates. Since then, the department's alumni base has grown to more than 600. Currently, the Department of Engineering has 550 students and 30 faculty.

Dr. Barbara Muller-Borer, chair of the department of engineering, said she is appreciative and enthusiastic of the continued support from industry partners, faculty and alumni for their investment in student scholarships.

"Scholarship funds are important for recruiting and retaining talented students and positively impact student success," she added.

In addition to returning alumni, many companies and individuals sponsored the event. Called investors, these sponsors included:

Diamond:
Purdue, Hyster-Yale and NC Electric Cooperatives

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ECU's Department of Engineering, Spencer C2, LLC

Silver:
ThermoFisher Scientific, SPX Transformer Solutions and Century 21, The Realty Group, Gene & Sally Dixon

Purple:
Truebeck Construction

Bronze:
NCEast Alliance, Timothy A. Spencer, Kyle Barnes, and Josh Brown

Batts inducted into Educators Hall of Fame

Batts, center, was joined by former students Ken Colvin, left, and Joshua Jones, who attended the induction ceremony.

Dr. David Batts of the Department of Technology Systems was inducted into the ECU College of Education's Educators Hall of Fame this fall. Batts was nominated by Gail and David Englert.

"We nominated Dr. Batts for the Educators Hall of Fame because he agreed to take on the role of faculty advisor to Phi Sigma Pi, because he exhibits and lives by the tenets of scholarship, leadership and fellowship in his university life each day, and because we treasure his friendship," said David Englert.

The Educators Hall of Fame was initiated in 1999 to permanently acknowledge education professionals and associations who have made distinguished contributions to the field of education through service and mission. Nominations are secured with a minimum $1,000 gift to the college for the establishment of the Educators Hall of Fame Endowment Scholarship. Scholarships from the endowment are awarded to outstanding education majors.

Robotics team wins Best Electronics

The work was a collaborative effort from students in three different departments (pictured below): Ricky Biggs (senior – Team Captain), Sean Wear (junior), and Spencer Lee (junior) hail from the Department of Technology Systems; Joe Williams (senior) is from the Department of Computer Science; and Mason Caroon (freshman) is from the Department of Engineering.

The ECU ATMAE Robotics team attended the Association of Technology, Management, and Applied Engineering's annual conference in Kansas City, Missouri, and brought home a first place award in the Electrical Category.

The team worked hard to overcome several interruptions in school and in parts delivery that hampered the final assembly of the Black Pearl. Team members met late into the night and on weekends to complete the robot during the fall semester, and the machine and the team was transported on time to the competition in Kansas City. The Black Pearl was designed to locate a target inside a maze autonomously, and then the operators would cut a wire using telepresence. Then in a secondRobotics comp act, the robot participated in a round of robot tag, where all the robots sought to "capture the flag" from their rivals. The Black Pearl had to fight off stiff competition from nine other university teams including Iowa State University, Ohio Northern University, the University of Northern Iowa and Millersville University.

The team demonstrated how all these groups can work together to achieve a goal. Except for the seniors, all of the members are excited to begin work on next year's challenge.

Amy Frank, ATMAE chapter faculty advisor, and Bill McClung, faculty robot team mentor, assisted throughout the project, and other members of the faculty and staff helped in the labs and made it possible for the team to complete this project. Department chair Dr. Tijjani Mohammed cajoled and prodded the students to make sure the work was finished.

Yes, we know it's purple.

The team worked at night and on weekends to complete the project during the fall semester.

College takes third at NASA rover challenge

The ECU team that took third place at the recent Human Exploration Rover Challenge included Morgan Watkins, Dr. Tarek Abdel-Salam (advisor), Andrew Grena, Jameson Morris, Evan Diener and Tanner Guin.

Five College of Engineering and Technology students recently competed and won third place in the 2018 Human Exploration Rover Challenge. The April event, which was held in Huntsville, Alabama, was sponsored by Marshall Space Flight Center and U.S. Space & Rocket Center.

According to a NASA news release, the competition challenged high school and college teams to design, build and test human-powered roving vehicles inspired by the Apollo lunar missions and future exploration missions to the moon, Mars and beyond. This year's competition challenged teams to complete 14 obstacles and five tasks throughout a half-mile course, with a six-minute supply of "virtual" oxygen.

The obstacles simulated the terrain found throughout the solar system, and the tasks challenged teams to collect and return samples, take photographs and plant a flag. Teams had to decide which tasks and obstacles to attempt or bypass before their clock expired.

ECU's team competed against 63 other universities and colleges. They were the only team to complete the entire obstacle course. The team included juniors Evan Diener, Andrew Grena, Tanner Guin, Jameson Morris and Morgan Watkins. Dr. Tarek Abdel-Salam served as the faculty advisor.

"The goal was for these students to take what they learned and apply it to future competitions," said Abdel-Salam.

Students in the team are members of the college's American Institute of Aeronautics and Astronautics and the American Society of Mechanical Engineers. The team's participation in the competition was made possible by the North Carolina Space Grant.

This year marked the second time an ECU team participated in the event.

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Spotlight: ICT Program's Senior Capstone Projects

In case you missed it, the College's information and computer technology (ICT) program's 10th Senior Capstone Presentations demonstrated how a student's educational foundation can turn a project from a vision to reality.

This senior-level, fall and spring course builds from each student's previous educational experiences; knowledge gleaned over the past years is brought into play in a practical demonstration of cumulative growth and understanding within the information technology (IT) field.

Thirty students teamed together, identified their IT project, worked with their client to solidify the scope and presented their course of action. Once their plan was approved, the project was executed in the spring.

Below are two examples of senior capstone projects that were completed in the spring 2018 semester.

Englewood Baptist Church needed to upgrade its overall network bandwidth to handle future upgrades. The project team of Jonathan Giles, Andrew Hoek and Tyler Evans installed CAT6A cabling that allowed for a 10-gigabit transmission rate. The increase in available bandwidth made for a more efficient media workflow environment for the church's graphic designers and video editors.

About their work, Dr. Michael Cloer, senior pastor of Englewood said, "The workers were professional, efficient and courteous as they upgraded and installed the many miles of ethernet cabling. This (installation) also enables us to be able to upgrade in the future as technology advances. It will allow all our staff and employees to be more productive.

We realize the cost of labor itself for such a huge project would be cost prohibited for most churches, including ours, but thanks to East Carolina University, this is now completed, and sooner than originally projected."

Another student team provided IT upgrade support for the Eastern North Carolina School for the Deaf. Bria Gardner, Trey Huffman, Melanie Llanos and Torrell Tindall performed a wireless site survey, installed and configured 20 new PCs, made recommendations for cable management, and conducted port mapping.

"ECU's motto is servire," said Huffman, a senior in information and computer technology. "Being able to help the school with IT upgrades was a way to show that service is more than just a motto. I learned a lot from the project."

Since 2008, the ICT program has 347 graduates who completed 83 unique capstone projects.

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