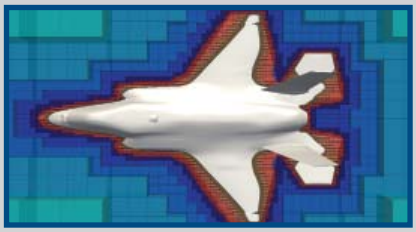
# THE UNIVERSITY OF TENNESSEE CHATTANOOGA

## COLLEGE OF ENGINEERING & COMPUTER SCIENCE

# 2014-2015 YEAR IN REVIEW


## www.utc.edu/CECS

# Contents



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## Message from the Dean

Greetings to the Friends of the College of Engineering and Computer Science (CECS) at the University of Tennessee at Chattanooga (UTC)!

This year as Interim Dean has been an exciting and busy one. CECS continues to offer a variety of engineering programs, such as Mechanical, Electrical, Civil, Chemical, and General Engineering as well as a Computer Science program with concentrations in Software Systems, Scientific Applications, Information Security and Assurance, and STEM Education, and an Engineering Technology Management program with concentrations in Construction Management and Engineering Management both at the undergraduate and graduate levels.

We focused on our nationally recognized programs including the National Center for Computational Engineering and National Center of Academic Excellence in Information Assurance. Our online master's program in Engineering Management is ranked as #7 Best Online Graduate Engineering Program according to the US News & World Report. In addition, we hosted the American Society of Civil Engineers (ASCE) Southeast Student Conference and competitions with over 1,000 students participating. We congratulate faculty and student teams for their well-received submissions.

There are several major developments at CECS that are designed to boost our students' success at the college and in their careers. Our new student advisors, Amanda Chambers and Laura Lee, will assist incoming and transfer students in designing a CECS program that meets their needs. Terri Clark joined us as Senior Director of Development and will identify support for CECS programs. Outreach Director James Kurtz is recruiting students from around the state and coordinates the CECS job fairs. These events engage the community and attract manufacturers, utilities, and technology companies as well as municipal, medical, and military recruiters. Deborah Levine as CECS Research Coordinator instructs, coaches, and advises students on technical writing and faculty on getting published. She also advises for grant proposals, particularly those that increase student performance and diversity.

CECS at UTC is proud to be the regional leader in technical education and applied research. Our goals are continually expanding our offerings and serve our community. We look forward to hearing from our alumni about their achievements.

Respectfully,
Neslihan Alp, Ph.D., P.E., Interim Dean



## Mission

Our mission is to develop exceptional engineers, computer scientists, and technologists, who will contribute to their fields and society through excellence in academics, applied research, and innovation.

## Vision

Our vision is to provide preeminent leadership in engineering, technology, computer science education, and applied research to benefit our students, alumni, sponsors, and community.

# CECS Ranks in Top Ten for Online Graduate Engineering Programs

U.S. News & World Report ranked the UTC College of Engineering and Computer Science in the top ten for Best Online Graduate Engineering programs.

The College offers a fully online Engineering Management graduate program and a variety of graduate courses. The program is renowned for its reliability, great advisement, experienced faculty, IT support, and the variety of course selection.

"We began offering graduate Engineering Management online courses in 2000 when there were not many online courses or programs at UTC," said Dr. Neslihan Alp, Interim Dean and UC Foundation Professor.

"Keeping pace with changing technology, we have increased and upgraded our offerings. We started with one online course per semester and put the whole program online in less than 5 years. After putting the entire Engineering Management master's program online, the enrollment increased from 15-20 students to 90-100 students, and graduation increased from 2-3 students per year to 25-30 students per year."

Offering the graduate courses online helps the College keep students in the program even if they have moved out of Chattanooga. It also allows international students to stay in their home country and complete the graduate program online without quitting their jobs and moving their families to the United States.

"The recent recognition that we have received from U.S. News & World Report as being #7 in the nation as the Best Online Graduate Engineering Program is a great honor for the college students, faculty, and staff, which is a result of 15 years of tremendous work and commitment," said Dr. Alp.

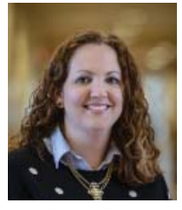
## CECS Hires Professional Advisors

Amanda Chambers and Laura Lee joined the CECS family as our first full-time academic advisors.

*Amanda Chambers*

Prior to UTC, Amanda worked as an advisor for the Jones College of Business at Middle Tennessee State University for 10 years. She graduated from Tennessee Technology University with a B.S. in Human Ecology and a Master's degree in Arts Curriculum and Instruction.

Before coming to UTC, Laura worked for Georgia Southern University and Middle State College. An alum of both institutions, she graduated from Georgia Southern University with a M.Ed. in Instructional Technology.



*Laura Lee*

Amanda and Laura advise transfer students as well as third semester CECS students until they have earned 90 hours. In addition to academic advising, our new advisors will be working with new students at orientations, referring students with academic struggles to the appropriate campus resources, and promoting other retention initiatives in CECS.

# Civil, Chemical & General Engineering

This year the Civil Engineering Department developed a joint-education program with Changsha University of Science and Technology (CsUST) in China. This program will allow 100 students from CsUST to study civil engineering at UTC. This is the third civil engineering joint-education program to be approved by the Chinese government and the only program that can issue dual degrees to students involved in the program.

Dr. Bradley Harris joined the Chemical Engineering program this year. His teaching interests include thermodynamics and fluid mechanics, as well as process control and design. His research interests involve the use of protein engineering to address current energy and environmental issues.

The department hired Sarah Alsobrooks as the new administrative assistant. Before UTC, Ms. Alsobrooks worked as a licensed veterinary technician at the Regional Institute for Veterinary Emergencies and Referrals in Chattanooga.

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# UTC hosts American Society of Civil Engineers Southeast Student Conference

*UTC places 11th overall in all competitions —*

Concrete canoe and steel bridge competitions were the highlights of the American Society of Civil Engineers (ASCE) Southeast Student Conference, sponsored by The University of Tennessee at Chattanooga in March 2015. UTC engineering students competed against students from Auburn, University of Alabama, University of Florida, University of Miami, University of Tennessee Knoxville, and Embry-Riddle Aeronautical University. Twenty-six colleges and universities attended.


*Concrete canoe competition —*

UTC ranked 11th in the competitions overall, beating teams from Vanderbilt University, Tennessee Tech, and University of Alabama. In the Concrete Canoe Competition, UTC was 13th, ahead of Tennessee Tech, Auburn University, and Embry-Riddle Aeronautical University.


*Steel bridge competition —*

# AIChE Team Places Second in Regional ChemE Car Competition, Heading to Nationals in Fall 2015

UTC's American Institute of Chemical Engineers (AIChE) team took home 2nd place in the ChemE Car and poster competitions at the AIChE Southeast Conference held in April, 2015 in Clearwater, Florida.

Twenty-one engineering schools from the Southeast competed, including Georgia Tech, University of Tennessee, Alabama, and Auburn. UTC's team was one of the smallest at the conference, with 14 members.

"The biggest thing that enabled us to succeed was the teamwork," said Amanda Wade captain of ChemE Car. "My job as a leader is to enable our team to do the best that we can and to push the team beyond where we thought we could go. This would not be possible if our team did not have a positive attitude and a very determined work ethic."

Prior to the competiton, each team spends months designing and fabricating a car that can be taken apart to fit into a shoebox.

The car is powered and stopped solely by chemical reactions. The distance and weight the car has to carry during the competition is determined by a coin toss an hour before the competition.

Then the team decides which chemical processes will move the car the exact distance it needs to go with the weight attached.

The team will head to the national AlChE competition in Salt Lake City, Utah, in fall 2015.




# Andrew's Parallel Bars Built to Encourage Physical Therapy

A group of students in the Introduction to Engineering Design course designed and fabricated a fun set of parallel bars for three-year-old Andrew, who was born with missing parts in four of his limbs.

Andrew's condition requires physical therapy to help his mobility with prosthetics. After the team met him at the beginning of the spring semester, they took the opportunity to help.

"We were excited to help and we took this project very seriously," said Joel McDevitt.

Creating the customized set of parallel bars required significant preparation and brainstorming. "We learned that even when you plan, there is nothing you can do to prepare for unexpected challenges," explained Austin Stone.

One challenge the team encountered was the assembly of the parallel bars. They realized the bars were not the same width apart when they compared one end to the other.

"The whole time it was smooth sailing, but then we had to find a way for the table to slide along the bars," said DeeDee-Taylah Russell.

The colorful set was designed to engage Andrew while he was in physical therapy. The team kept safety in mind and ensured there were no rough edges or ways for Andrew to hurt himself. They cut bright colored pool "noodles" and wrapped them around the metal parts of the fun set.

"We were limited with the precision machinery we used, but we worked until we were sure the activity tray floats on its bearings," said Ameer Jibrin.

The team also presented a poster and the parallel bars at the 10th Annual Assistive Design Showcase at the UTC Engineering, Math, and Computer Science building on April 21, 2015.

Other projects featured in the showcase were:

- "Layla's sensory wall" to help a six-year-old girl to improve her development.
- "Plasma Car" adaptation to improve an existing Plasma Car for eight-year-old Calob, who has spastic quadriplegia.
- A playhouse frame to provide a structure for children with disabilities at the Stellar Therapy Clinic.

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# Computer Science and Engineering

There were many notable accomplishments in the Computer Science and Engineering (CSE) Department including the appointment of Department Head Dr. Joseph Kizza to the Carnegie African Diaspora Fellowship Program (ADF). He will provide seven weeks of "teaching, mentoring and graduate research supervision to strengthen the Digital Forensics Program" at the Uganda Technology and Management University (UTAMU) beginning in June 2015.

Several faculty and students participated in the American Computing Machinery (ACM) Mid-Southeastern Conference, one of ACM's oldest conferences. They received second and third place for their research in multiple areas of computer science. The ACM Mid-Southeastern conference serves as an opportunity for both faculty and students to present their research in an open and vibrant atmosphere in all areas of computer science.

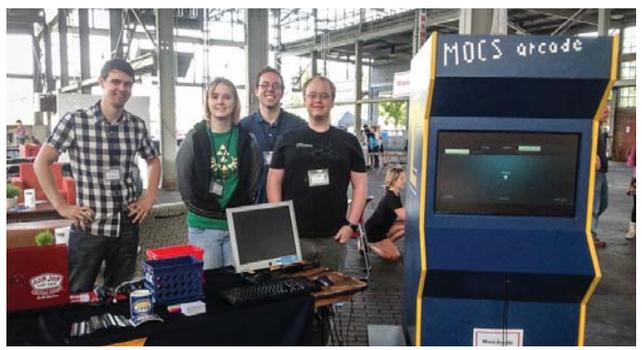
Dr. Craig Tanis led a group of Computer Science and Computer Engineering students to build an arcade cabinet that showcased video games developed by the students. Their arcade cabinet was featured at Maker Faire, also know as "the Greatest Show (and tell) on earth."

Dr. Tanis also participated in Hackanooga 2014 with several students. Hackanooga is a 48-hour hack-a-thon presented by US Ignite and Mozilla that connects Web developers to Chattanooga's unique 1-gigabit-per-second Internet speed.

Professor Claire McCullough served as Commissioner on the Engineering Accreditation Commission (EAC) of ABET, which accredits college and university programs in the disciplines of applied science, computer engineering, and engineering technology. McCullough, Professor Yu Liang, and Katherine Winters wrote many community oriented proposals.

Professor Dalei Wu worked with two undergraduate students on a project of sensor networks and gave a research presentation in the CSE Departmental Seminar.

CSE has added Data Science concentrations both at the undergraduate and graduate levels to produce students with needed skills in the growing business big data analysis.






# Education Agreements With Chinese Institution Encourage International Collaboration

The College of Engineering and Computer Science and Shanghai Institute of Technology established a specific agreement that will allow academic and collaborative opportunities for students and faculty on both campuses.

Dr. Randy Walker, Interim Dean of the Graduate School at UTC and Dr. Li Yang, Professor and Graduate Coordinator in Computer Science and Engineering helped to work on the agreement after they visited three universities in China during August 2014. Following their visit, officials from the Shanghai Institute visited UTC.

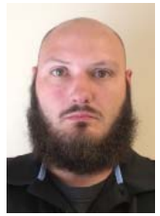
"The goals of this endeavor were to grow the graduate school at UTC and increase the presence of international students," said Dr. Walker.

The agreement with CECS will allow Shanghai Institute of Technology students who have completed three years and meet all of the requirements to study at UTC their senior year. If the students are accepted into UTC's graduate program, they could take graduate courses online as seniors and continue in an accelerated graduate program at UTC.

"This will bring a global perspective to our undergraduate students, challenge all of our students to learn from each other, and grow international enrollment as well as graduate programs," said Dr. Neslihan Alp, Interim Dean of the College of Engineering and Computer Science.

Dr. Walker said the next step will be encouraging the Engineering and Computer Science students and faculty to engage in this opportunity.

## Computer Science and Engineering Faculty and Staff updates



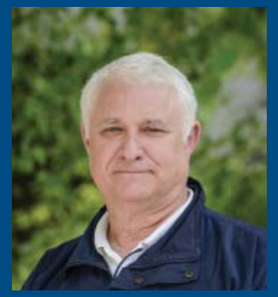
- David Schwab joined the Computer Science and Engineering faculty this year. He comes to UTC with a master's degree in Computer Science from UTC as well as a master's degree in Jazz Studies from the University of New Orleans. His research interests include computer security and real-time embedded systems.

- Dr. Dalei Wu joined the Computer Science and Engineering faculty with a Ph.D in computer engineering from the University of Nebraska. His research interests include cyber-physical systems, intelligent systems, and mobile computing. Prior to UTC he worked as a postdoctoral research associate at the Mechatronics Research Lab in the Department of Engineering at the Massachusetts Institute of Technology (MIT).

# Computational Engineering

The Graduate School of Computational Engineering and the SimCenter formed partnerships with Tennessee Valley Authority (TVA), CHI Engineering and Oak Ridge Laboratories in order to supplement research and encourage student participation.

A follow-on contract with SmartTruck Systems (STS) was issued to the Department. The work is focused on the computational evaluation of the effectiveness of various drag reduction devices designed by STS.



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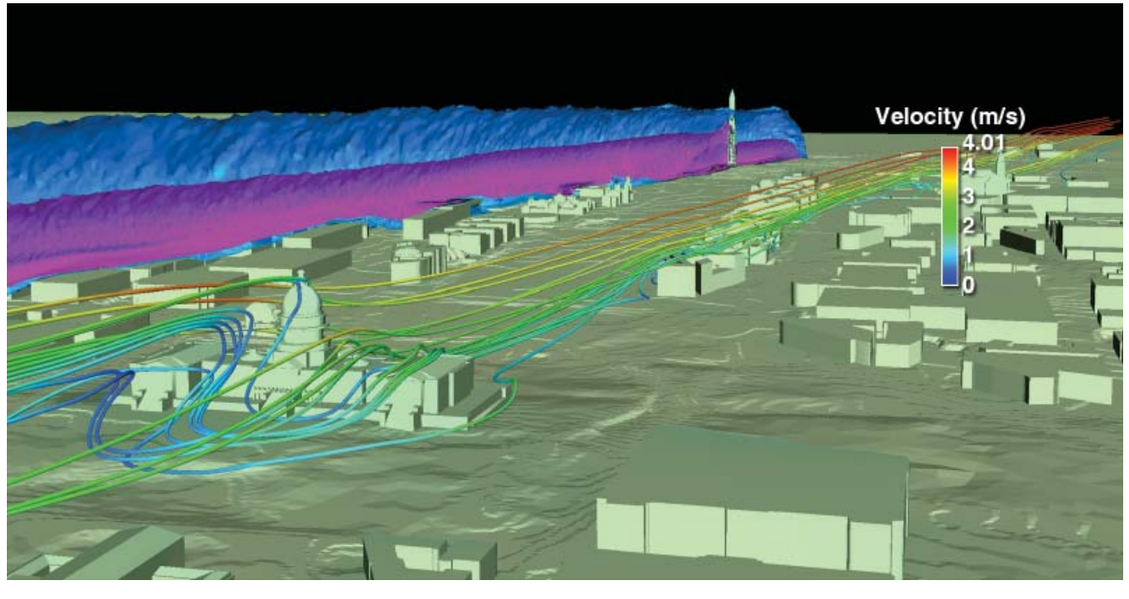





## TVA Award: Consortium for Advanced Simulation of Light-Water Reactors

The Department has received an award from Tennessee Valley Authority (TVA) for work on the Consortium for Advanced Simulation of Light-Water Reactors (CASL). The current work is geared toward gridding a smaller region called the "lower plenum chamber" which contains support structures that can adversely affect the flow of cooling water though this region of the reactor. The SimCenter anticipates becoming a grid generation resource for the Consortium and is discussing the possibility with the TVA project coordinator, Rose Montgomery.

CHI Engineering Services, a nationally recognized leader specializing in Liquefied Natural Gas (LNG) and Natural Gas, engineering, procurement and construction services, issued an award to the Department for a follow-on contract that is focused on simulating the release of liquefied natural gas from storage facilities. The purpose is to investigate various modifications to the site that will result in complete containment of a spill.

A partnership with Oak Ridge will allow four Oak Ridge National Laboratory (ORNL) research staff to hold faculty appointments in the Graduate School of Computational Engineering (CmE).

Membership in the Graduate Faculty will allow them to teach courses and serve on graduate committees of CmE students. Another agreement will allow seven CmE faculty access to ORNL.

These faculty members will have easy access to the ORNL campus and can participate in joint proposals submitted by either organization.

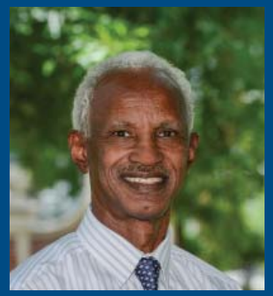
## Computational Engineering Faculty and Staff updates

- Dr. Ramesh Pankajakshan of the SimCenter made an invited presentation to the National Research Council's Committee on Assessment of Technologies and Approaches for Reducing Fuel Consumption of Medium and Heavy-Duty Vehicles Phase Two.

  The talk focused on the validation of computational fluid dynamics (CFD) models for trucks, the use of CFD for certification and the outlook for computing and progress in truck aerodynamics by 2025.

- SimCenter researchers have been engaged with analyzing various drag-reduction devices for heavy trucks for the past several years and are recognized throughout the trucking industry as leaders in the use of physics-based computational simulation (e.g., CFD) for ground vehicle-related aerodynamic analysis.

# Electrical Engineering



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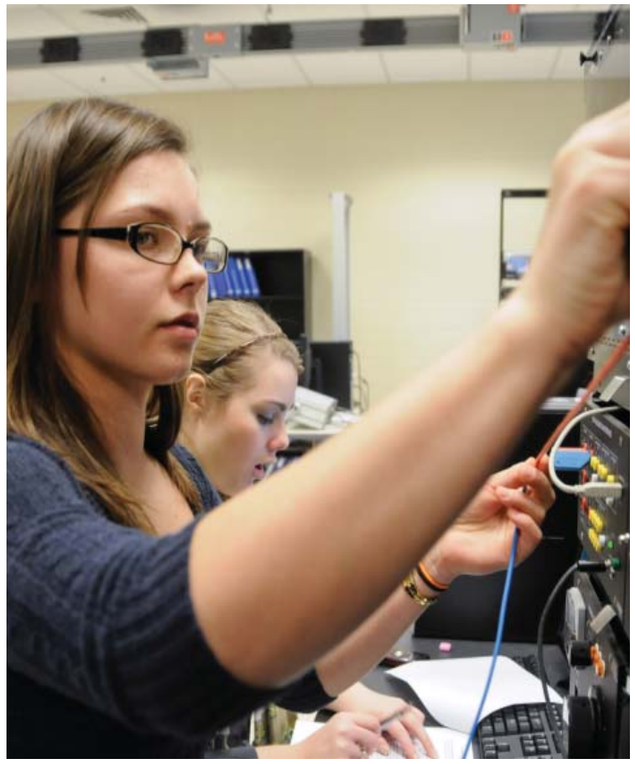
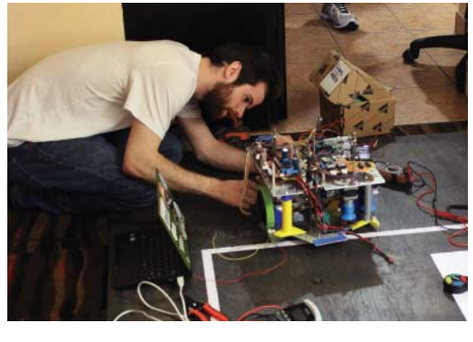


This year the Electrical Engineering Department gained three new faculty members to enhance the education and research in the department.

Dr. Donald R. Reising joined the CECS family as an assistant professor. Reising earned his Ph.D from the Air Force Institute of Technology and worked as an adjunct professor there. He comes to UTC with a long list of presentations and publications.

Dr. Daniel Loveless joined the faculty in August 2014. He comes to UTC with a Ph.D from Vanderbilt University. Prior to UTC he worked as a Research Assistant Professor at the Department of Electrical Engineering and Computer Science at Vanderbilt University. He served as a reviewer for over ten refereed journals and conferences from 2008 to present.

Dr. Abdelrahman Karrar joined the faculty as a visiting professor from the University of Khartoum in Sudan where he was the Head of the Electrical Engineering Department. During his time at the University of Khartoum he taught upper division power systems courses and supervised projects. In addition he completed his Master's thesis on voltage control of the Blue Nile Grid, and his Ph.D thesis in the United Kingdom on contingency and stability planning for the national grid of Sudan.





# TVA's Power System Analysis Team Pioneers Innovative Safety Solutions

Electrical Engineering faculty member Dr. Abdelrahman Karrar and graduate students Haytham Saeed and Mariana Kamel helped Tennessee Valley Authority (TVA) with the research that led to a breakthrough in open phase faults.

Initially, the industry speculated that a Class 1E protection system could not be developed to guard against open phase fault vulnerability. Challenging this notion, TVA's Power System Analysis team made significant advancements in power system modeling and analysis, directed development of industry-wide software, and performed the world's first open-phase validation test. These efforts led to a key discovery: use of proven protective relaying at the Class 1E power system boundary can ensure complete protection of safety-related equipment. Not only does TVA's comprehensive open phase fault solution provide dramatic cost savings, it is also transferable to nuclear plants around the world.

Saeed and Kamel received $1,000 scholarships from ETAP (Electrical Transient Analyzer Program). ETAP is a full spectrum analytical engineering firm specializing in the planning, design, analysis, operation, training, and computer simulation of power systems.

*Pictured above TVA's Power System Analysis Team, L-R: Tim Fallesen, Preston Cooper, Mark Bowman and Tamatha Womack*

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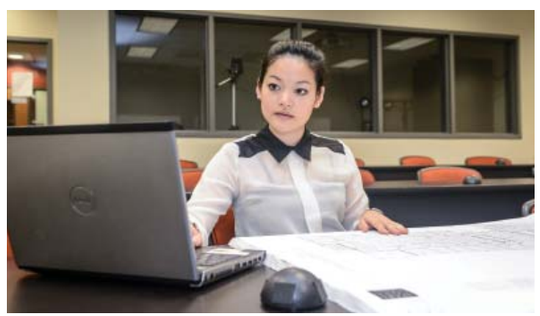
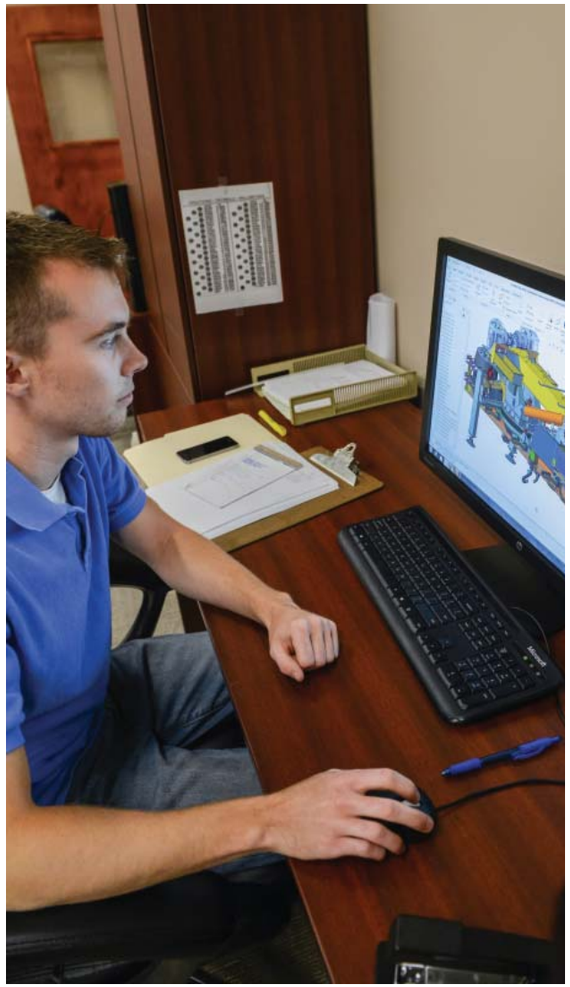


The Department of Engineering Management and Technology had a busy 2014-2015 school year.

The Master of Science in Engineering Management program received a perfect score from an external peer review conducted by Dr. Resit Unal, Professor and Director of Asynchronous Programs at Old Dominion University.

The Department also submitted a minor in Engineering Management to supplement the undergraduate programs in the engineering discipline, which will better prepare students for the workforce.





# Students Network With Professionals Through Pecha-Kucha Presentation

In Spring 2015, Dr. Aldo McLean, assistant professor, dared his students to present their projects in Pecha-Kucha style.

Pecha-Kucha presentations are a challenge because they allow for only 20 slides with each slide shown for 20 seconds. Most students are used to making presentations using PowerPoint which allows for any number of slides and for customizing the timing of each slide.

"The entire presentation takes six minutes and forty seconds," explained Dr. McLean. "Pecha-Kucha forces students to refine the high points of their presentations."

Dr. McLean and representatives from Tri-State American Production and Inventory Control Society (APICS) and American Society for Quality (ASQ) used the technique during a meeting hosted by UTC in order to allow students to network and become familiar with the style.

"I enjoyed learning about the two professional organizations," said Solomon C. Puryear, an engineering technology and management major. "They sound like awesome opportunities for engineering management students. I will recommend students to attend the next meeting, as I want others to take advantage of such awesome networking," he added.

"The meeting encourages career development," said McLean. "When our students leave school, they are encouraged to join professional associations."

Members of the groups toured the College of Engineering and Computer Science and the new library after the meeting.

## Engineering Management & Technology Faculty and Staff updates

- Dr. McMahon stepped up as Department Head as Dr. Alp became the new Interim Dean for the College.

- Paul Baggett joined the Engineering Management and Technology department as an instructor in construction management. Mr. Baggett comes from the DBS Corporation. He brings many years of experience as an adjunct instructor at several area colleges.

- Mr. Jan Evans presented two papers at the 2014 IIE Annual Conference and is on the planning committee for the 2015 IIE Annual Conference in Nashville.

- Kim Sapp joined the department as the new administrative assistant. She worked in the SimCenter for three-and-a-half years before coming on board at CECS.

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# Mechanical Engineering

The department has a new addition to the faculty, Dr. Trevor Elliott, who received his Ph. D. in Aerospace Engineering from the University of Tennessee Space Institute. He has served as the advisor for the IEEE Robotics team and will serve as the advisor for the Society for Automotive Engineering (SAE) Mini Baja team next year.

Drs. Gary McDonald, Chuck Margraves, and Trevor Elliott received a $26,036 grant from the Board of Architectural and Engineering examiners to support and upgrade the Mechanical Engineering labs.

Student Nicholas True was awarded $10,000 by the American Council of Engineering Companies in Washington, D.C. Earlier this year he was one of two students awarded a $1,000 scholarship from the American Council of Engineering Companies. The last Tennessee student to receive the national scholarship was UTC alumna Ipshita Thomas in 2009.



# 2014-15 Mini Baja Team

The 2014-15 UTC Mini Baja team participated in the Society for Automotive Engineers (SAE) Mini Baja competition in Auburn, Alabama in April 2015.

The team did pass the technical inspection portion of the competition, but the timing was complicated by difficulties with the subsystems made to adapt to a transmission replacement. The subsystem was made to replace an in-house designed CVT (Continuously Variable Transmission), which failed a few days before the competition.

When teams require more time to pass the inspection, then the technical inspection overlaps the dynamic events. This meant that the team was not able to participate in the dynamic testing, or receive scores in that category, during this year's competition.

The team has the opportunity to focus on correcting issues with the car before next year's competition and is enthusiastic about competing again.

**Chattanooga is one of the top five metro areas for new engineering jobs***

**changetheequation.org/blog/top-5-cities-new-engineering-jobs*

# UTC IEEE Robotics Team

Students involved in the UTC-Institute of Electrical and Electronics Engineers (IEEE) robotics team participated in the 2015 IEEE Southeast Conference in Ft. Lauderdale, Florida, in April 2015.

The team ambitiously chose to use high-precision line followers which allow for details 'turning' of the robot. Knowing that the line follower has limited availability, the team came prepared with an extra set in case of an emergency. Unfortunately, both the original line follower and the back-up that the team brought with them experienced hardware damage. The line followers could not be replaced once the competition was underway.

"The team worked in two groups on two separate alternative solutions for line following and constructed their own emitter-detector circuits on-site," said the team advisor, Dr. Trevor Elliott. "But with less than 24 hours of testing time there was not enough time to finalize a functioning robot. This team put in a very valiant effort to recover from an unforeseeable issue," he said.

## Engineering Students Work Together, Grow Edible Plants, Fish in Aquaponics System

A group of mechanical, industrial and electrical engineering students in a senior interdisciplinary design class built a small-scale freshwater automated aquaponics system.

This system includes an innovative automatic water changing system and instrumentation used to measure nitrates, nitrites, ammonia, and pH balance. It even has a swirl and sand filter that separates the solid waste from the tank and uses the breakdown of those solids to help nourish the plants.

But it doesn't stop there. The system also features three aquaponic raft vegetation racks. A sump pump delivers nutrients into the vegetation bed feed line.

Duckweed, a secondary food source for the fish, is grown in a bin fed with waste water after it's been through a filter. A media bed uses an ebb and flow technique where water is pumped from the sump tank, until a bell siphon is activated. Then the bed drains rapidly back into the sump tank.

The ultimate goal of this project is to feed planted vegetation solely with fish waste products. Tilapia fish were chosen because they could be closely packed in the 125-gallon tank.

The plants have yielded bell peppers, jalapenos, swiss chard, lettuce, and tomatoes for students to taste.



## UTC College of Engineering and Computer Science Job Fair Attracts Businesses and Students


The College of Engineering and Computer Science hosted its first Career Fair in November 2014 and a second one in March 2015.

Nearly 30 companies sent representatives to the College's Engineering, Math and Computer Science building at each career fair. Students had the opportunity to explore career and job opportunities in engineering, computer science, and technology fields.

"We are planning to host these events two times a year, one in the fall and one in the spring semester, so students can find jobs before they graduate," said Dr. Neslihan Alp, Interim Dean of the College of Engineering and Computer Science. "Company representatives were very happy with our students' quality and preparation, and look forward to hiring them."

Participating companies included:

- Archer Daniels Midland Company
- Beaulieu
- Bridgestone Warren Plant
- Capitalmark Bank and Trust
- Chattem
- City of Chattanooga Engineering Division
- Cormetech, Inc
- DENSO
- Edwin Bohr Electronics
- EPB
- Gestamp Chattanooga
- Gill Industries
- Human Technologies (HTI)
- Jacobs Technology
- Mars Chocolate North America
- Mesa Associates, Inc.
- Miniter Group
- Modis
- Rentenbach Constructors Inc.
- Shaw Industry
- Signal Energy
- Tennessee Valley Authority
- Unum
- US Navy
- UTC
- Volkswagen Group of America Chattanooga Operations, LLC
- Wright Brothers Const. Co., Inc.

# Lab Dedicated, Supports Concrete Research

More than 10,000 bridges need to be replaced in the United States. They're mostly made from concrete, a popular building material that has a reputation for freezing, thawing, and cracking.

A researcher at The University of Tennessee at Chattanooga is examining the sustainability, durability, repair, and life cycle of concrete. He is testing ways to make it last longer so that it does not have to be replaced as frequently.

Brent Rollins is working in a new research laboratory, outfitted with a collection of instruments not found at many higher education institutions in the United States. He has been conducting research in mixing concrete with biomass (recyclable plant material) and caught the attention of Dalton B. Holmes, who has generously provided $128,000 in funding for the new lab where Rollins works.

Rollins explained that working biomass into concrete isn't a new practice—ancient civilizations combined straw into the mix of rock and sand to create building material. The new twist is finding a way to make biomass concrete work in a modern construction environment. The need is urgent, considering the limited supplies of quality aggregates are rapidly being depleted.

The new Dalton B. Holmes Long Term Durability Concrete Research Lab was dedicated last Fall, to promote education, research, discovery and innovation.

"I went on a tour yesterday with Brent—of the lab, and of the building, and of the campus. He really expressed a passion for UTC and for his work. As a donor, I think that's extremely important, that I feel like my gift has made a difference in his work—in what he can do, and will do," Holmes told a group who attended the dedication. "I feel this gift will truly be appreciated, and hopefully, a lot of good things will come from it."


*Dalton Holmes and family with Chancellor Angle*



# Engineering Professor and UTC Center Recognized with Sustainable Transportation Award

*From left to right: Dr. Shari Meghreblian, TDEC Deputy Commissioner; Bob Martineau, TDEC Commissioner, Dr. Ignatius Fomunung; and Toks Omishakin, Assistant Commissioner, Tennessee Department of Transportation (TDOT)*

Dr. Ignatius Fomunung, UC Foundation Associate Professor of Civil Engineering and Interim Director of the Center for Energy, Transportation and the Environment (CETE), was recognized by The Tennessee Department of Environment and Conservation (TDEC), in conjunction with Clean Air Month, for the outstanding efforts made by The University of Tennessee at Chattanooga to reduce transportation-related energy and emissions at the inaugural Sustainable Transportation Awards in Memphis, Tennessee.

Fomunung submitted a report for the competition.

Bob Martineau, TDEC Commissioner, explains that transportation accounts for nearly 30 percent of Tennessee's end-use energy consumption, according to the U.S. Energy Information Administration.

"By recognizing leaders in this field who are taking specific positive actions, we hope to inspire replication of innovative projects, activities, and initiatives across the state in an effort to save natural resources, improve the health and well-being of Tennesseans, and create efficiencies in the delivery of goods and services."

Saying it was a privilege to be part of the inaugural forum for sustainable transportation, and a distinct honor for him and UTC to be recognized for work to advance sustainability within and outside the state of Tennessee, Fomunung "was delighted to note from this forum that several entities and individuals are engaged in similar activities across the state."

The Center of Energy, Transportation and the Environment at The University of Tennessee at Chattanooga is focused on applying research to develop clean, renewable energy systems for transportation that will reduce the harmful effects of emissions and promote energy conservation and independence.

## Retiring Faculty & Staff

*Dr. Ed McMahon (31 Years)*

*Dr. Tim Swafford (13 Years)*

*Dr. Lafayette Taylor (13 Years)*

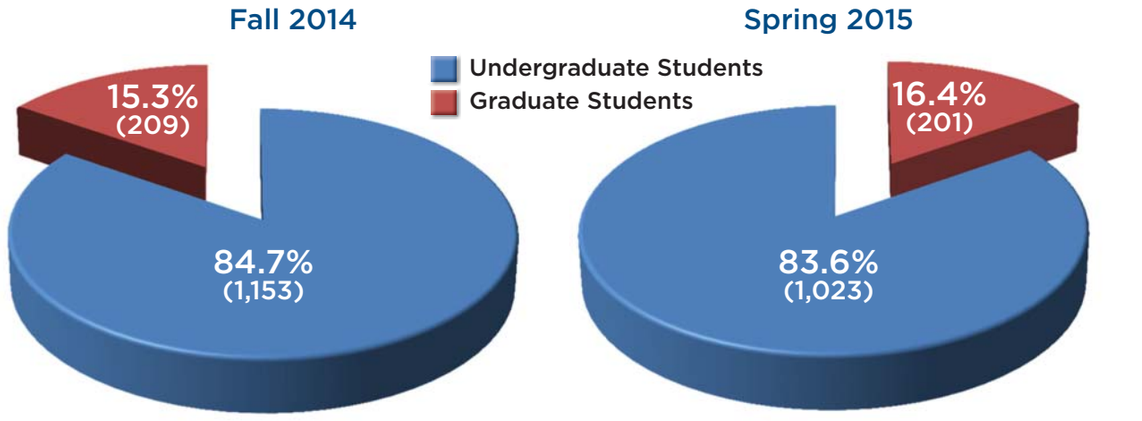
*Dr. Jack Thompson (35 Years)*

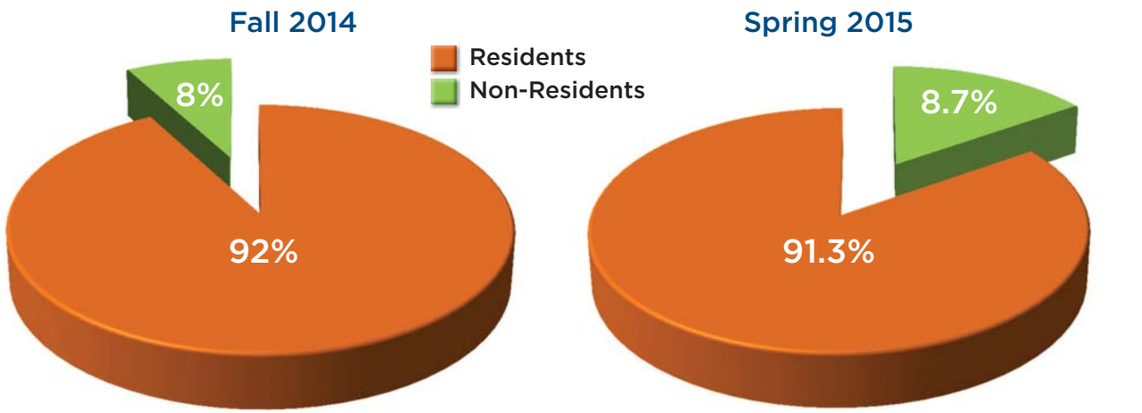
*Mrs. Pam Lewallen (5 Years)*

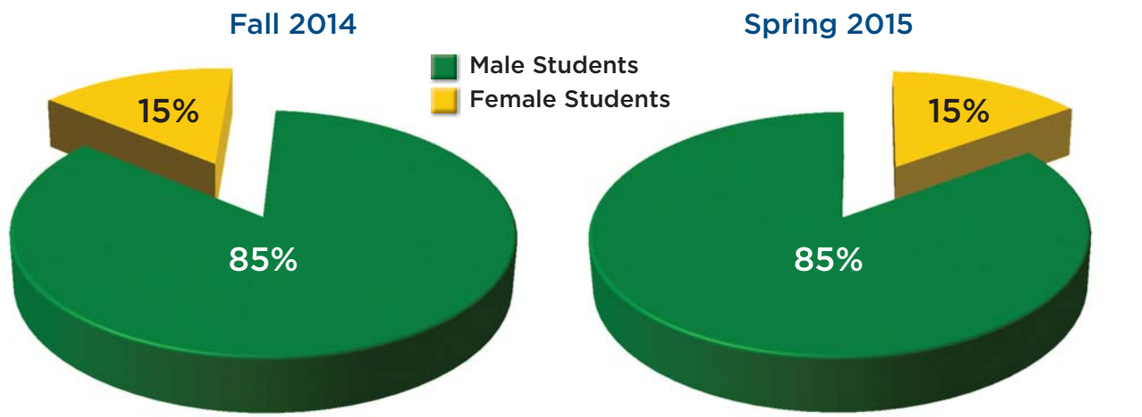
*Mrs. Gigi Walters (11 Years)*

*Thank you for your years of service to UTC and the College of Engineering and Computer Science*

# UTC College of Engineering and Computer Science Quick Facts

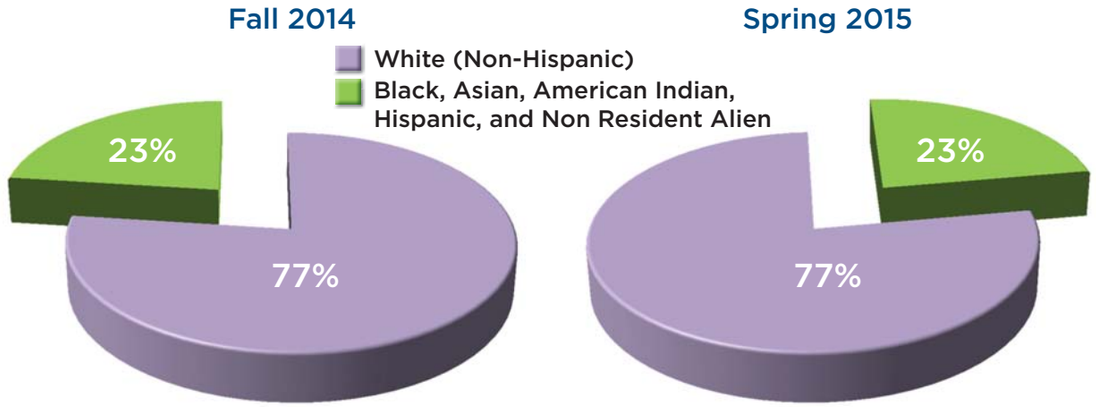


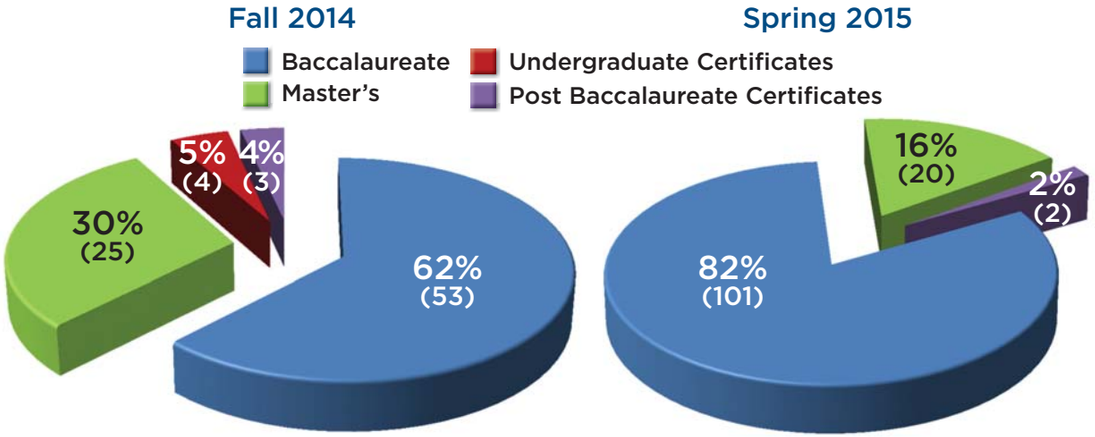





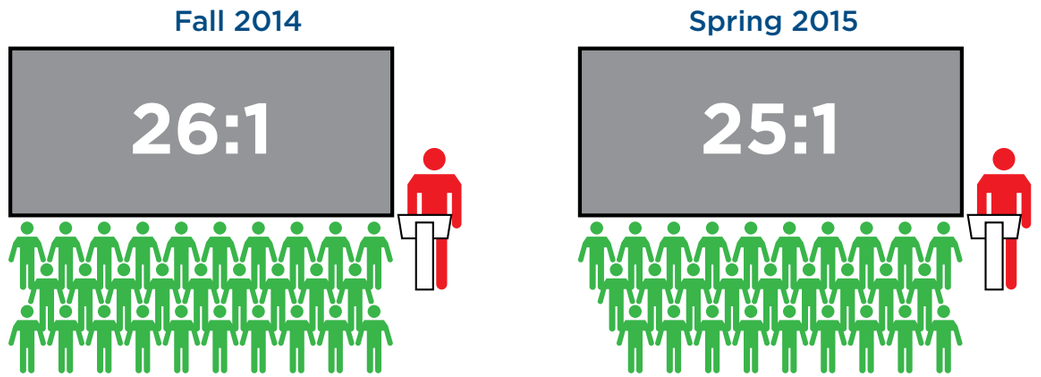

## STUDENT DIVERSITY[1]




## DEGREES AWARDED




## STUDENT TO FACULTY RATIO[2]




[1] Diversity % includes Black, Asian, American Indian, Hispanic, and Non Resident Alien racial and ethnic categories.

[2] The student to faculty ratio was calculated following the same formula as defined in the Common Data Set. The ratio reported is of full-time equivalent students (FT + 1/3 PT) to full-time equivalent instructional faculty (FT + 1/3 PT). Computational Engineering students and faculty were excluded from this calculation as they are considered a stand-alone graduate program.

THE UNIVERSITY OF TENNESSEE
CHATTANOOGA
COLLEGE OF ENGINEERING
& COMPUTER SCIENCE

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