



Transportation Institute

North Carolina Agricultural and Technical State University

Summer Transportation Institute Celebrates Its 25th Year

The N.C. A&T Summer Transportation Institute (STI), the oldest in the nation, celebrated its 25th anniversary and the closing of the 2017 summer program with a commemorative luncheon ceremony on Aug. 4.

The ceremony program included testimonials from former and current members of the program and an informational presentation by Virginia Tsu, who heads the National Summer Transportation Institute program as the Director of the Center for Transportation Workforce Development in the Federal Highway Administration.

The STI was created to grow awareness of and interest in the many viable career paths available in the transportation industry. The STI gives high school students opportunities to interact with transportation industry professionals and discuss theory and practice in a classroom setting. It fosters diversity in education and career opportunities in transportation by providing participants with skills that will enable them to make knowledgeable decisions concerning transportation/logistics or transportation engineering as a field of study. Students are offered the opportunity to enhance their academic skills, explore career choices available in the transportation industry, and engage in a wide range of educational and interesting, hands-on activities.

According to Maranda McBride, director of the Transportation Institute at A&T:

“The STI program currently brings in approximately 15 to 20 rising junior and senior high school students each year to learn about the transportation profession. The program consists of classroom lectures, projects, and field trips, all designed to expose high school students to careers in the transportation/supply chain management industry.”

The STI is the beginning of a pipeline for students, which can end in lucrative supply chain management jobs. The STI program provides students with a variety of valuable opportunities, including attending a national industry conference. STI graduates have gone into careers with Fortune 500 firms, federal and state agencies, and public and private companies, including:

- Merck
- Norfolk Southern Railroad
- John Deere
- The Naval Surface Warfare Center
- Kimberly-Clark
- Central Intelligence Agency
- Greensboro Transit Authority
- Union Pacific Railroad
- and more



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Summer Transportation Institute Celebrates Its 25th Year, continued



From left: Kaiya Maye, Kierston Bankston, Nevaeh McEachirn, Morgan Goins, Taylor Edwards, Annie Long, Jayla Wade, Zafira Harris, Alize Hopkins, Marquise Moore, Zachary Headden, Jaden Nesbitt, Winston Griffin, Miles Staton, Chavez Chapman and Jameson Cunningham

Since coming on staff at the Transportation Institute in 1973, Deborah Underwood, STI program director, has witnessed countless student success stories.

“I especially like those stories that start with students who come to the STI with no prior knowledge of transportation and think this will be just something to do for the summer. Their eyes are opened to all the career possibilities available in transportation, and they decide to come to A&T and major in transportation/supply chain. They want to graduate and get a job but don’t realize that they will be highly recruited and start a professional career in an area underrepresented by minorities. Each time one of our students is offered a job, it’s a success story. Our program has made an impact on diversity in the transportation industry.”

For information about 2018 STI Program, contact: Carletta Dudley, STI Program Coordinator, cedudle1@ncat.edu.

First Annual CATM Symposium

The inaugural Center for Advanced Transportation Mobility (CATM) Symposium was held at the N.C. A&T Alumni-Foundation Event Center on Oct. 17, 2017. The purpose of the event was to introduce CATM to the community and to facilitate interaction between students, faculty, practitioners and public and private entities with interests in transportation. One of the primary objectives of CATM is to foster new collaborations which are of benefit to the transportation community.

In November of 2016, A&T was awarded a Tier 1 University Transportation Center (UTC) grant by the U.S. Department of Transportation. Since the establishment of CATM, research projects and programs have been put into place to fulfill research, education, workforce development and technology transfer objectives. The symposium highlighted those activities.

While CATM exists within A&T's College of Business and Economics, the consortium includes other educational institutions: the Virginia Tech Transportation Institute, Embry-Riddle Aeronautical University and the University of the District of Columbia. Representatives of these universities participated in the symposium and presented information about their schools' histories and capabilities in the area. Specifically, presentations included:

- *"Public Dialysis Transport Efficiency using Digital Media" - Dr. Mary Lind and Dr. Rhonda Hensley (N.C. A&T)*
- *"Development, Design, and Vulnerable Road User Mobility Assistance Platform" - Dr. Justin Owens and Mr. Andrew Miller (VTII) and Dr. Younho Seong and Dr. Sun Yi (N.C. A&T)*
- *"Multi-Scale Models for Transportation Systems under Emergency Conditions" - Dr. Xiuli Qu, Dr. Younho Seong, Dr. Lauren Davis (N.C. A&T) and Dr. Dahai Lui (ERAU)*
- *"Automated Last Mile Connectivity for Vulnerable Users" - Mr. Kevin Grove and Mr. Andrew Alden (VTII) and Dr. Shengbin Wang and Dr. Ryoichi Sakano (N.C. A&T).*



The keynote speaker was the former United States Secretary of Transportation and former mayor of Charlotte, North Carolina, Anthony Foxx. While he was secretary, Foxx earned the moniker "The Great Connector" because of his ambitious efforts to update, streamline, innovate, and optimize the nation's transportation system. During his address, Foxx discussed the expanding mobility crisis, the role freight movement is playing in the growth of road congestion, how technology can be leveraged to decrease the number of trips taken, and the importance of integrating various modes of transportation. In the end, he encouraged the audience to never lose sight of what transportation is really about – the people.

Approximately 72 individuals attended the symposium. Along with members from CATM's consortium institutions, the audience included people from other educational institutions, such as the University of North Carolina at Chapel-Hill, University of North Carolina at Charlotte, and University of Kentucky. Representatives from the North Carolina Department of Transportation, Piedmont Authority for Regional Transportation, Virginia Department of Transportation as well as Federal Motor Carrier Safety Administration were in attendance. Additionally, transportation and logistics organizations such as Transplace and the National Complete Streets Coalition were represented at the event.

The 2018 symposium will be hosted by Virginia Tech Transportation Institute on Nov. 6, in Blacksburg, Virginia.

Student Awards and Activities

2017-18 Dwight David Eisenhower HBCU Transportation Fellowship

The Dwight David Eisenhower Transportation Fellowship Program is intended to attract, enhance, and retain the nation's brightest minds and top talent to transportation management, research and engineering professions. The undergraduate Eisenhower HBCU Fellowship is awarded on the basis of merit including: academic records, class standing, GPA, transcripts, transportation work experience, and recommendations.

Malik Norwood was a recipient of the 2017-18 Eisenhower HBCU Transportation Fellowship. He is a senior in the supply chain management program this year. Norwood plans to work in logistics after graduating and would like to eventually move into a career in the area of international logistics.



“I feel honored to be granted this opportunity and am thankful to those people that helped me achieve it.”

University Transportation Center 2018 Outstanding Student of the Year

Cynthia Glass was honored as the 2018 CATM University Transportation Center Outstanding Student of the Year. She is a third-year, computational science and engineering doctoral student. After graduation, Glass hopes to share her knowledge, skills and experience with stakeholders in the transportation industry, continue membership and journal reviews for transportation research organizations, and conduct supplementary transportation-related research for academia.

“I am proud to be chosen the UTC Outstanding Student of the Year 2018 for N.C. A&T's Transportation Institute. My 25-plus years of professional automotive and transportation experience help strengthen the research I am conducting for my dissertation and for the Institute. I am pleased that my abilities and potential are respected and rewarded.”



Student Awards and Activities, continued

Transportation Research Board 2018 Minority Student Research Fellow

Rubin Ortega was awarded the TRB Minority Student Research Fellowship for the 2017-18 academic year. Ortega is a senior applied engineering technology student at N.C. A&T. Upon graduating, he plans to continue his education by earning a graduate degree.



“I am honored to receive such a prestigious award. It helps motivate me to continue my educational pursuits.”

Southeastern Transportation Center Education Award Fall 2017 Recipients

The Southeastern Transportation Center (STC) is a consortium of nine universities in the Southeastern U.S. that have formed a partnership to serve the region. The STC has an aggressive program focused on recruiting and supporting top students pursuing transportation degrees to become future leaders in the transportation industry. N.C. A&T is a national leader in this effort. The following students received STC scholarship awards last fall:

Trey Cash
Kristian Conner
Aleckzandrya Jackson
Ebony Martin
Malik Norwood
Nicole Perry

Brandon Rogers
Tyler Huggins
Kaelyn Moore
Jacob Smith
Joseph Smith
Desiree Wade

Kristian Conner
Lacey Evans
Jala Haitt
Nafi Tucker
Aliyah McCray

Institute of Transportation Engineers Executive Board Recipients

The Institute of Transportation Engineers (ITE) is an international membership association of transportation professionals and students who work to improve mobility and safety for all transportation system users with a goal of helping build smart and livable communities. The following students served as officers in the organization during the 2017-18 academic year:

- **President** - Tyler Huggins, civil engineering major,
- **Vice President** - Brandon Rodgers, supply chain management major
- **Secretary** - Rashmi Kumari, chemical engineering major
- **Treasurer** - Charles Young, landscape architecture major

Summer 2017 Research Internships

Four students participated in the CATM Summer Research Internship Program, which consisted of eight weeks of faculty-led research activities, professional development seminars, field trips, and more. In addition to the invaluable knowledge students gained from the research experience, they received a \$5,000 stipend plus a \$600 housing allowance.

Kendall Henry, a senior in the supply chain management program, worked under Maranda McBride, director of the Transportation Institute, and conducted an experiment focusing on pedestrian safety.



“Conducting the research for the Transportation Institute taught me to pause before jumping to conclusions not only in academics but in real life. The methods I learned showed me the value of exploring all aspects of a problem before deciding on a solution.”

Patrick Stanley is a senior studying transportation and supply chain management. He worked under Dr. Xiuli Qu, and Sachin Mhatre, a Ph.D. candidate in the industrial and systems engineering department, summarizing and organizing Hurricane Matthew data to be used to evaluate emergency management responses and activities. He is planning a career in the supply chain industry or possibly transportation research.

“I learned to always look beneath the surface, you may be surprised at what you might learn. I learned to never make an assumption before finding out the facts. Learning research basics taught me to look, question, and think more critically about a problem or situation.”



Stephon Jordan is a senior business management student. Last summer he worked under Drs. Mary Lind and Rhonda Hensley, both from the management department, retrieving data from kidney dialysis centers throughout North Carolina to gain a better understanding of their transit systems. Jordan aspires to start in the real estate industry and go on to own an investment group, touching on industries from transportation to dining.



“The internship gave me a greater respect for the transportation industry. I saw how timeliness has a direct effect on profits. It opened my eyes to the vast opportunities in transportation. I have a new sense of purpose now and feel it's my goal and duty to be an example for future generations.”

Aleckzandrya Jackson, a senior supply chain management student, was a summer research intern working with McBride, Dr. Omar Woodham from the marketing, transportation and supply chain department, and Dr. Jeanne Holmes from the management department, on a License Plate Agency customer service improvement project funded by the N.C. Department of Transportation.

Educational Trips

In January, N.C. A&T students traveled to the District of Columbia for three days to attend the 97th annual meeting of the Transportation Research Board (TRB), which included global transportation professionals ranging from policy makers, administrators, practitioners, researchers, and representatives of government, industry and academia. TRB is the largest conference for transportation professionals in the world with over 12,000 people in attendance.



From left: Deborah Underwood, Kristian Conner, Nicole Perry, Ebone Martin, Tyler Huggins, Rashmi Kumari, Aleckzandriya Jackson, Malik Norwood, Patrick Stanley, Charles Young and Brandon Rogers

In November of 2017, a group of N.C. A&T students traveled to Gainesville, FL to attend the Southeastern Transportation Research, Innovation, Development and Education Center (STRIDE) conference at the University of Florida's Transportation Institute. While there, the group toured the Dollar General distribution center in Alachua, FL.



From left: Dr. Maranda McBride, Carletta Dudley, Janelle Horton, Trey Cash, Kristian Conner, Brandon Rogers, Aleckzandriya Jackson, Nafi Tucker, Malik Norwood, Joseph Smith, Jala Haitt, Jacob Smith and Deborah Underwood

ITS Carolinas Panel

Dr. Younho Seong represented N.C. A&T on a university research panel discussing automated vehicles at the Intelligent Transportation Society (ITS) Carolinas 2017/2018 annual meeting Feb. 12-13 in Charlotte, North Carolina. Seong is a professor in the Department of Industrial and Systems Engineering. His research interests include human machine interaction, decision-making and neuroergonomics. The panel, moderated by Dr. Michael Clamann from Duke University, also included Dr. Lori Benneer from Duke University and Dr. Wei Fan from UNC-Charlotte.

The panelists discussed several aspects regarding the use of automated vehicles, from research and technology developments to ethical and real-life decisions. Each participant gave a presentation on their research related to the interaction between humans and robots, artificial intelligence and autonomous vehicles, moral decision-making and policy issues associated with self-driving cars, and strategies to allow innovation while prioritizing public safety.

Formed in 2015, ITS Carolinas is a regional chapter of ITS America. Members include vendors/contractors, consultants, universities, and the public. It is the intent of ITS Carolinas to create a collaborative environment with input from public, private, and academic stakeholders to influence transportation policy in the Carolinas.

Deborah Underwood Honored

The Transportation Institute and CATM would like to acknowledge and congratulate Deborah Underwood, program manager of the Transportation Institute, for receiving the Council for University Transportation Center/American Road and Transportation Builders Association (CUTC/ARTBA) Award for Administrative Leadership. She was presented the honor Jan. 6 at the CUTC annual banquet held during the Transportation Research Board Meeting in the District of Columbia.

The CUTC/ARTBA Administrative Leadership Award is given annually to an individual in a staff position or non-tenure-track faculty position to recognize outstanding administrative leadership contributions to the transportation field. Underwood was selected for the award from a group of nominees from other schools with University Transportation Centers nationwide. She received a plaque acknowledging the award and a check for \$750.

Additionally, Underwood achieved recognition from the Federal Highway Administration during the Eisenhower Closing Ceremony at TRB for her contributions to the Dwight D. Eisenhower Transportation Fellowship Program and the National Summer Transportation Institute Program. Underwood has the prestigious record of serving as the director of A&T's Summer High School Transportation Institute for the past 25 years. It is the longest running university STI program in the country and was the model for the Federal Highway Administration's national STI program.

“I feel very fortunate to have been involved in N.C. A&T's STI program over the years. The program has been very successful in increasing minority representation in the transportation workforce. It's exciting to see students attending the STI program go on to have productive and lucrative careers in the transportation industry.”

Left to right: Paul Skoutelas, president and CEO of the American Public Transportation Association, Deborah Underwood, president and director of CUTC



Featured Transportation Research Studies

Improving Public Dialysis Transport with Digital Media

In addition to the numerous medical concerns they already have to deal with, people with kidney disease requiring dialysis can face frustrating challenges just getting to and from their life-saving dialysis treatments. Medical transportation needs in rural areas of North Carolina have been a focus of the N.C. A&T Transportation Institute for over 40 years. On Feb. 26, professors Mary Lind and Rhonda Hensley gave a presentation on a study they conducted including all 100 North Carolina counties. Their study looked at how advances in digital communication media can present opportunities to improve the efficiency of delivering para-transit services. The study is part of a project funded through the Center for Advanced Transportation Mobility.

When using para-transit services, effective communication and coordination between the dialysis location, the patient, and the transportation provider is essential. As can be imagined, this communication triangle can lead to problems. Improving the dialogue with digital technology was the focus of the study. In most situations, a patient is given a 30-minute window for pickup. The para-transit driver is only allowed to wait for five minutes for a passenger. The vehicles follow routes which could include multiple pickups; therefore, what might only be a 20-minute ride could take an hour. If a patient isn't ready for pickup or a para-transit vehicle misses or is late for a pickup, this one event can have a cascading detrimental effect on each part of the triangle.

In a presentation detailing the study on February 26, Dr. Lind said:



“Public transit managers need an inexpensive yet effective means of scheduling transportation. Unfortunately, the situation is only going to get worse. Kidney failure is increasing in North Carolina. We are included in what's known as the ‘nation’s stroke belt.’”

Digital media and other modern technology could connect the three components of the dialysis patient transportation triangle using routing software in an Uber-type system to improve transit service in several ways. First, the transit agencies would be able to utilize their resources in a more cost efficient manner. The dialysis centers could optimize their resources with up-to-date information on patient availability allowing them to more fully utilize their facilities. The patients would benefit as well. With better real-time communication, the patients could use the technology to minimize their wait times on both ends. The patients' needs are always the priority and at the center of this model.

Digital, wearable technologies are needed for dialysis patients to enable real-time communication with the paratransit agencies. Patients need be alerted to the time of their pickup, and they need to know if the paratransit vehicle is running late for either pickup from the home or pickup at the dialysis centers. Many dialysis patients are part of the Baby Boomer age group and may not be technology savvy or may have limited vision. The devices would have to be made specifically for this population with a high degree of usability.

Featured Transportation Research Studies, continued

Automated Last Mile Connectivity for Vulnerable Users

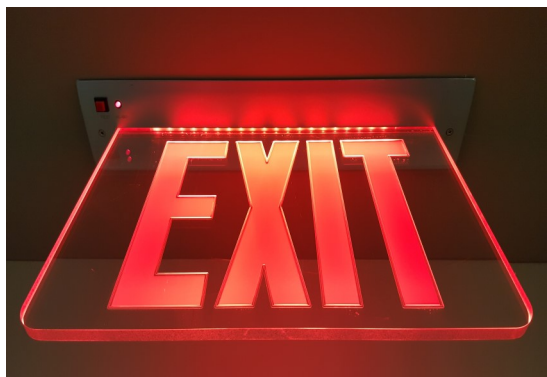
On Nov. 29, 2017, Dr. Shengbin Wang, assistant professor of supply chain management, gave a presentation on research he is conducting with Dr. Ryoichi Sakano, associate professor of economics, and researchers at the Virginia Tech Transportation Institute (VTTI). The title of his presentation was "Automated Last Mile Connectivity for Vulnerable Users – an Introduction." While you may think such a specific area of study could have no bearing on you, it just might.

The primary objective of the project is to evaluate the real-world usability and potential benefits of an Automated Last Mile Shuttle (ALMS) system. The research is targeted specifically towards vulnerable road users (VRUs). In this case, VRUs are people who don't have personal means of transportation to get from one location to another. "Last Mile/First Mile Connectivity" refers to additional means of transport necessary to move travelers from their place of origin to an access point for public transportation services and from public transportation service locations to their final destination.

Innovative methods to expand public transportation access to VRUs are needed. ALMS mobility systems have been proposed to provide VRUs with timely on-demand access to existing fixed-route transit systems. The primary components of these proposed systems are driverless shuttles with automated scheduling and routing processes. For instance, low speed, environmentally-friendly, electric vehicles charged at transit stops could be utilized.

The research is being conducted in multiple phases over three years. Data collection is planned in Greensboro, North Carolina and Blacksburg, Virginia in collaboration with VTTI research associates, Kevin Grove and Andrew Alden. Phase 1 of the project includes literature review, pilot testing of the ALMS, development of test methods, and survey and focus group activities. Subsequent phases of the study will expand to include more participants and scenarios.

Mass Shootings and Natural Disasters Make Evacuation Route Planning More Important



Unfortunately, public evacuations are becoming frequent occurrences. It seems like almost every day you see a headline announcing a devastating hurricane or an uncontrollable wildfire forcing evacuations. In addition to those, the all too often mass shootings or terrorists' threats and attacks are making public evacuations more critical than ever.

How people react during such an evacuation is being studied by a team of professors and students at Embry-Riddle Aeronautical University's Daytona Beach campus. Embry-Riddle professors and students are developing mathematical and simulation models to study how people behave in emergency situations in closed environments, for example airports, aircrafts, or buildings.

The research will look at certain aspects of people's behavior as well as environmental factors. Studying how people reacted in past emergencies can produce more efficient evacuation routes and plans as well as better training strategies to implement prior to an emergency. The findings could also lead to valuable structural changes.

Funded by a five-year matching grant from the U.S. Department of Transportation University Transportation Center Program, the research led by Drs. Dahai Liu and Sirish Namilae is intended to result in regulations and policies that reduce the amount of time it takes to evacuate, ultimately saving lives.

Embry-Riddle is a member of the Center for Advanced Transportation Mobility consortium. For more information on this research, visit: <https://news.erau.edu/headlines/with-a-rise-in-natural-disasters-and-active-shooters-an-embry-riddle-team-seeks-to-protect/>

David Howard Talks About “Embracing Transportation in All Careers”

The N.C. A&T College of Business and Economics Closing Bell Speaker Series was honored to welcome David L. Howard, chief deputy secretary for the N.C. Department of Transportation (NCDOT), as guest speaker on Feb. 15. Howard informed students about jobs within the NCDOT that require an array of business degrees. He encouraged students to think with an entrepreneurial mindset and determine how they might be able to leverage their skills and interests to fill needs with the NCDOT organization as independent contractors.

“The transportation infrastructure, present and future, of North Carolina is an essential part of the state's vitality and economy. Transportation services connect people, products and places with concern for efficiency, safety, and environmental sensitivity. The transportation industry encompasses people, technology, and systems from many different specialties, ranging from physics to psychology. We welcome all kinds of talent and bright minds.”



The event was hosted by the American Production and Inventory Control Society, a professional association of students and industry professionals for the study of supply chain and operations management. Students interested in summer internship opportunities with the transportation department were encouraged to visit the NCDOT website (https://www.ncdot.gov/careers/edu/initiatives/internship_hbcu.html) and apply.

The LimeBike Program Comes to N.C. A&T and Greensboro

All over Greensboro and throughout the N.C. A&T campus, you will see bright lime green bikes parked in random locations. The bikes are part of a bike-share program that allows riders to borrow bikes to travel throughout campus and parts of Greensboro. The bikes were brought to A&T's campus last August.

Dr. Hyoshin Park, an assistant professor in the Department of Computational Science and Engineering, who is interested in aiding the implementation of the Lime bike program throughout the city, commented on future plans:



“New LimeBike share stations will be strategically located striving to ensure equality of availability for all populations throughout the city and surrounding communities — including low income residents.”

To ride a LimeBike, a person uses a smart phone app to unlock a bike and pay. The rental costs students and employees of universities 50 cents per 30-minute ride, and others pay \$1 per half hour. The bright green bikes around campus and in Greensboro are the products of the LimeBike company out of California. LimeBike, which was founded in January 2017, had its first launch here in Greensboro at The University of North Carolina at Greensboro.

The N.C. A&T Transportation Institute conducted an informal survey of lime bike users at A&T. The 20 survey participants revealed that bike users tend to be repeat users, with and without cars, who use the bikes to get around campus or for short trips off campus and back.



**NORTH CAROLINA
AGRICULTURAL AND TECHNICAL
STATE UNIVERSITY**

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