

LANGSTON UNIVERSITY TRANSPORTATION ACADEMY (LUTA)

OVERVIEW: Langston University hosts the Langston University Transportation Academy (LUTA) annually. The primary objective is to attract a diversified group of young people into the transportation workforce. Few minorities enter transportation professions. To increase diversity of future transportation professionals in the United States, it is necessary to deliver intervention efforts that are geared toward encouraging underrepresented students to take academic courses in science, technology, engineering and mathematics. It is advantageous for young people to be recruited early in secondary school and exposed to career choices and opportunities in the transportation industry. Therefore, the academy has three related objectives: (1) to create awareness of and stimulate interest in career opportunities in the transportation industry; (2) to attract a broad and diverse selection of bright minds, and acquaint and stimulate them with the various aspects of the transportation industry; and (3) to increase the number of students who choose careers in the transportation industry.



Figure 1: LUTA students visiting ODOT

Promoting fast, smooth, and safe transportation is one of the underlying themes of the Langston University Transportation Academy. LUTA curriculum generally involves learning about land, air, water, and space transportation, and how these modes of transportation interface with each other. Also, students hone their computer, math, chemistry, and communication skills.

LUTA was conducted from May 29 to June 10, 2016. Under the supervision of Chongo Mundende (Director of LUTA) and Marshan Oliver-Marick (an Associate Director of SPTC), seventeen students completed the academy. The following sections provide a brief overview of activities.

Water Transportation: Water transportation is limited in Oklahoma; however, students learned about the transportation of goods and services via waterways. Students traveled to the Port of Catoosa Authority that operates the McClellan–Kerr Arkansas River Navigation System (MKARNS). Students observed the intermodal concept of transportation first hand. They saw trucks bring in or take away freight, the train move freight, and the barges being unloaded or loaded.

Land Transportation: Students learned about careers in land transportation through classroom presentations, field trips and hands-on activities. Students interacted with engineers who discussed bridge and road design, transportation planning and traffic control. They also learned about the No Zone and defensive driving in addition to experiencing driving under the influence through a simulated car and driving course.

Students constructed bridges using popsicle sticks and glue, which were tested to determine the amount of load they could carry. The participants were grouped in pairs. Working together, students were asked to design the bridge, estimate the number of sticks they needed, and then construct the bridge they had designed. Only one bridge failed at 39 pounds of loading. The rest did not fail when the maximum 60-pound load was applied.

Students visited the SPTC and constructed ramps that were tested for navigating a ball without leaving the ramp or breaking when rolled from the top to the bottom of the ramp. Led by SPTC staff and engineering students, the ramps were judged based on pre-selected criteria. All students were required to use the materials provided, which included the same number of blocks. The designs varied greatly and had different results underscoring the variation in engineering techniques and need for design and testing.



Additionally, students had opportunities to assemble a robotic car (Figure 2). Students were instructed about car components and functionality, including design. This activity proved valuable in teaching students time management, teamwork, design and construction.



Figure 2: LUTA students assembling a robotic car

Air and Space Transportation: Students experienced many facets of air and space transportation through three separate, but related field trips. At the Oklahoma City Metro Aviation Career Center, students learned about the history of aviation and the various career opportunities offered even to high school students, particularly in mechanics. At the Mike Monroney Aeronautical Center, students learned about air traffic control, plane crash investigations, plane inspection procedures around the world, and safe evacuation procedures during emergencies. At the Spartan College of Aeronautics and Technology, students learned about certifications and degrees offered, as well as career opportunities available after attending the college. The students enjoyed working with engines best based on feedback.

The culminating experience was the opportunity for participants to welcome family and friends, showcase their projects and share information learned. Students were in

charge of the interactive program. Instructors and counselors presented awards for classroom engagement, which included awards for math, communication, computers, sports and recreation, and overall performance.

Students articulated an appreciation for the LUTA experience, and voiced interest in continued pursuit of transportation and transportation related careers. The following is a sampling of the reflections on the 2016 experience. One student wrote: "I learned about how planes are built and how to make toy cars...I would like to explore becoming an aviation mechanic. I want to take advantage of this program and go to college to learn about flying planes and fixing cars. I like using my hands."



Figure 3: Visiting the Spartan College of Aeronautics and Technology

Another student wrote: "I have learned a lot of stuff, whether in class or on a field trip. LUTA has introduced me to the world of transportation. Every day I learn new things. I have enjoyed the trips. We have been to places like the FAA and Port of Catoosa. I am happy that I got to meet new people because they have taught me a lot.

About the Academy Director

D. Chongo Mundende of Langston University is the LUTA Director. Please send inquiries to dcmundende@langston.edu.

The Southern Plains Transportation Center is a consortium of eight universities in U.S. Department of Transportation Region VI: the University of Oklahoma, Oklahoma State University, Langston University, University of Arkansas, University of New Mexico, Louisiana Tech University, University of Texas at El Paso and Texas Tech University.



The SPTC provides a unique opportunity through large-scale, multi-institutional initiatives, to develop comprehensive, cost-effective, and implementable solutions to critical infrastructure issues facing the transportation systems of the region and the nation, and to prepare transportation professionals for leadership roles through *Research, Leadership, Collaboration, Education, Outreach, Tech Transfer and Workforce Development* activities.