

From Rocky Top to the Classroom: K-5 STEM Outreach by the Volunteers

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The University of Tennessee Knoxville (UTK) branch of the American Institute of Aeronautics and Astronautics aims to connect students with the aerospace industry and research areas to expand professional networking opportunities while providing additional academic and social resources to promote community among our members. Over the past two years, the chapter has focused on outreach and service through exciting, hands-on activities that demonstrate engineering skills and inspire STEM careers for K-5 students in the surrounding Knoxville, Tennessee area. Earlier efforts included an online STEM activity workbook that was made public to serve as additional resources for classroom instructional teams. Recently, the chapter emphasized in-person classroom academic opportunities, expanding the workbook to offer a dedicated day for students to practice and reinforce learning in a hands-on environment during the school day that aligned with current STEM standards used across the school system. The chapter also engaged with other engineering organizations on campus, such as the Society of Women Engineers, Jessica M. Morris Women in Engineering program, to help expand the number of outreach events possible and encourage further student involvement across the Tickle College of Engineering and UTK.

Events Completed for the Fall 2025 Semester:

- 1) The King's Academy STEM Day
 - a) Constructed three educational stations for 175 elementary school students to rotate through during their school day.
 - b) Students learned about the basics of aerodynamics, fluid mechanics, and flight through engaging hands-on activities such as building stomp rockets and designing aluminum foil boats to support various amounts of marbles.
- 2) MUSE Science Center
 - a) Elementary school students who visited the science center were able to build their own stomp rockets and learn about the importance of each feature.
- 3) Mt. Olive Elementary School STEM Night
 - a) Students in grades K-5 participated in the construction of model helicopters and stomp rockets to learn about engineering basics for vehicles in flight.

Events Planned for this Semester:

- 1) Amherst Elementary School Science Fair
- 2) Knoxville, Tennessee Boys and Girls Club Classroom Lesson

Final Thoughts:

Building off this chapter's previous work on a classroom workbook, this year focused on bringing these activities and lessons to students in the classroom to inspire the next generation. Through implementing hands-on, engaging activities that focus on everyday engineering fundamentals in large-scale outreach events, it was possible to teach students about the basics of aerospace engineering in at an elementary school level. Going forward, our chapter will continue to engage with local schools to help grow the STEM field and teach younger students about aerospace engineering. Future plans are to reach out within the Tickle College of Engineering to the Engineering Fundamentals program to seek additional opportunities and collaborations to partner even more students and faculty to continuously support STEM education across Knox County, the state of Tennessee, and the United States.

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