



MARCH  
2024

News from the field of the premiere DoD Youth STEAM education program.

## 2024 Aerial Robotics STARBASE Institute



Since 2013, Peach State STARBASE (PSS) has been pioneering development and implementation of a unique aerial robotics program for STARBASE Advanced schools. The program has also been offering annual Teacher Institutes to the faculty members of the participating schools to help them adequately prepare their students. In 2022, the first STARBASE-exclusive course was offered at PSS and has been repeated annually since then. In 2024, the course was expanded to three days to better cover the vast amount of information and lab experiences offered.

Partially funded by a grant from Lockheed-Martin Aeronautics Corporation, the 5-7 March 2024 Institute began with two days in the classroom and labs, starting off with an overview of basic concepts and foundational theories of aerodynamics, Newtonian physics, and aircraft design and operation, along with demonstrations and practice sessions in our Flight Simulation Lab. This was followed by a study of basic aerial robotic designs, functions, and operations, including a special lab using dedicated drone simulators to practice initially operating in a safe environment. Dr. Stuart Michelson of the Georgia Tech Research Institute joined us with a lecture on new developments and future arcs of aerial and multi-environment robotics technology, as well as an overview of his own collegiate level drone competition.

The final day of the Institute began with a morning of building drones provided by For the Win (FTW) Robotics for each participant, and the remaining part of the day

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"An investment in knowledge pays the best interest." -- Benjamin Franklin

This year, STARBASE will have regional workshops during the summer of 2024! More information to follow. Please protect these dates in your calendars:

**Eastern Time Zone Sites & Puerto Rico:**

31 July & 1 Aug

**Central Time Zone Sites:**

7-8 Aug

**Mountain, Pacific, Hawaii, & Guam Time Zone Sites:**

25-26 June

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was spent in a large hanger at Dobbins ARB, coding and flying these drones through a competition course also set up and run by FTW Robotics. The drones given to each participant are FTW's newest model, the Hopper, which has not yet been released to the public and education markets. FTW Robotics even provided a catered lunch that day for everyone involved!

Part of this course is typically taught by Georgia Army National Guard Blackhawk pilots and includes a visit to their maintenance facility, but due to the deployment of these soldiers and their aircraft to the Middle East, these components had to be cancelled for the most recent session. PSS is hopeful to have them return to the institute next year.

PSS will present this 3-day course again in 2025 and is more than happy to help any STARBASE build and develop their own drone curriculum for the Advanced Program. For more information, contact:

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## STARBASE Fort Johnson has taken off!

3,2,1, BLAST OFF!! On January 22, 2024, the newest Louisiana academy held their ribbon cutting with several activities for everyone to view and engage with, giving them a taste of what is to come for the students in the Parish.

On February 1, 2024, the staff attended their first STEM night at Vernon Middle School seeing over 250 fifth and sixth grade students and their families. Ozobots and the 3D printer were a huge success sparking the interest of the community.

Officially taking off with students on February 19th, they have filled seven academies from Beauregard Parish to get them through the end of the school year. STARBASE Fort Johnson will see approximately 236 students during the spring semester. The Warriors of Fort Johnson are actively filling the calendar for fall of 2024 with students in Vernon and Beauregard Parish. The staff is extremely excited for summer camps that are nailed down for June and July. It is with great pride that they can say their assignment has started, and they are ecstatic to complete their first seven missions!



# STEM Girl Day at STARBASE Austin



STARBASE Austin proudly participated in this year's STEM Girl Day event hosted by the University of Texas's Women in STEM group. The event engaged nearly 10,000 K-8th grade students and benefited from the dedicated support of approximately 1,600 volunteers. The event took place at the University of Texas (UT) at Austin on February 24th, creating an exciting and educational atmosphere for young learners.

STARBASE Austin hosted an engaging "Origami in STEM" activity, encouraging students to explore the intersections of art and science. Participants created three unique origami projects, while instructors emphasized the STEM connections. From engineering concepts demonstrated by each origami activity to the mathematical aspects of origami structures, students experienced hands-on learning in an enjoyable and memorable way.

"We're dedicated to inspiring a love for STEM from an early age, and UT Girl Day was a fantastic platform for that," said Daniela Rimer, Lead Instructor at STARBASE Austin. "Our 'Origami in STEM' event aimed to make learning not only educational but also fun for the participants."

STARBASE Austin is thankful to UT's Women in STEM group for extending the invitation to participate in such an impactful and meaningful event and the team's dedication to making "Origami in STEM" a resounding success. Their commitment to inspiring young minds and making STEM accessible has left a lasting impact on the participating students.



## STARBASE Directors Brown Bag Series

The STARBASE Brown Bag Series is back again in FY24! Please consider joining us at one or all of the virtual brown bag sessions below. Look for an email with registration information soon!



**Thursday, May 9th @ 1pm ET**

An Update from LEGO with  
Lauren Russell

**Thursday, June 13th @ 1pm ET**

Curriculum Implementation, Instruction and Scheduling  
Q&A

# STARBASE Advanced in the Little Apple . . . Manhattan, Kansas

In Manhattan, Kansas, an innovative group of students are eagerly working with the SPIKE Prime Robots in STARBASE's Advanced after-school club at Eisenhower Middle School (EMS). Collaborating with EMS for the past three years, STARBASE Manhattan has pioneered an engaging platform for students to delve into the captivating world of robotics. Through strategic planning, hands-on activities, and a supportive environment, the robotics club has flourished, nurturing a passion for science and technology among the students!

With commitment to inclusivity and skill development, the club welcomes individuals with varying levels of experience and expertise and ensures accessibility even for those with no prior background knowledge. The staff-created "Foundational Skills Passport" serves as a scaffold, guiding students through the fundamentals of programming and coding. This self-paced approach empowers learners to progress at their own speed, fostering a sense of autonomy and mastery.

While mastering foundational skills remains of great importance, the robotics club also cultivates creativity and innovation. Through engaging challenges like the FIRST LEGO League (FLL) Mission Challenges, students go beyond their thought potential as they explore difficult missions and problem-solving. The SUPERPOWERED 2022/2023 Color Missions provide a canvas for experimentation encouraging students to push the boundaries of their coding capabilities. The FLL Mission challenges have sparked excitement and discovery among the robotics club learners!



A recent highlight in this year's club was the introduction of a "Battle Bots" competition. This initiative added a thrilling dimension to the club's activities! Tasked with engineering their robotic warriors, students embraced the challenge with enthusiasm and determination. The competition not only showcased their inventiveness but also instilled values of teamwork, resilience, and sportsmanship. As robots crashed in a dual elimination bracket, the classroom buzzed with excitement, marking a milestone in the club's journey!

With each passing year, new enrichments are added to the club through the shared vision and collaboration of STARBASE Manhattan and EMS. Looking to the future, STARBASE Manhattan wants to ensure the club remains dynamic, empowering, and innovative. Through the blend of structured curriculum, creative challenges, and spirited competition, the club has not only instilled technical skills but also fostered innovative creations among these amazing students!

# From 3M to Students- A STARBASE Advanced Coach's Perspective

By Aline Henkel, 3M



Vapor deposited gold shoes, smog reducing roof shingles, and pressure reducing bandages are all incredible on their own, but what do these innovations have in common? These items, among Post-it® Notes and Scotch® Tape are all part of the over 100,000 products 3M has developed through the ingenuity of STEM-skilled scientists and engineers. Having worked for 3M for 33 years and also as a coach and mentor participating in STARBASE Minnesota-St. Paul's Advanced program with E-STEM Middle School students, it was extremely rewarding to be a part of providing students a rare glimpse into the world of 3M at the 3M Innovation Center, something typically reserved for adults, covering a range of consumer products, healthcare, aerospace, and a variety of other industrial markets. There, students were able to see the power of innovation, and students quickly learned that not only do mistakes and failure result in improved designs, but they also often result in new products just waiting to be discovered. I was proud to share this experience with our deserving middle school students that I hope one day will become future scientists, engineers, researchers, and innovators at 3M or wherever they choose to work and live.

From the perspective of a STEM coach in my second year working with STARBASE and E-STEM Middle School students, I thoroughly enjoyed working alongside students to help pique their curiosity and develop their skills as they explored meteorology, oceanography, geology, and astronomy. Among the many highlights this year was helping students design and test structures to handle catastrophic events like flooding, create seismographs to monitor for earthquakes and tsunamic events, CAD, VR, rocketry, and design solutions for humans inhabiting a Mars base. Throughout

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each session, the other coaches and I shared our experiences in the “real world” illustrating clear connections between students’ work, STEM industry and related STEM careers.

My two hours a week as a mentor and coach was one of the best investments of my time and one that I cherish. I love the students’ energy, enthusiasm, curiosity, and how they collaborated and exchanged ideas on their designs. Seeing the look on their faces when they observed the results of their efforts filled me with joy. In turn, I would share my experiences at 3M when working on products from design and eventually to the marketplace, in the “Plan-Do-Study-Act” cycle to solve problems all around us. A tradition, created by William McKnight, of allowing up to 15% of 3M employees’ time working on areas they are curious about still goes on today as a key method in developing cutting edge products. I tried to convey to students that same approach -- to always be curious and never stop learning. At the end of each session, I thanked the students for their time and shared with them at least one thing that I learned right alongside them. The hugs and requests for autographs from students of the mentors on the last day was priceless. It spoke volumes about just how important and impactful these nurturing and encouraging relationships with students are. And when they saw how excited and passionate we mentors were about STEM, they paid attention to that and wanted to be a part of it.

Thanks to STARBASE Minnesota’s 25-year partnership with 3M and with other corporate partners in the community, my colleagues and I are able to participate in these experiences that I believe are as beneficial to us as they are to students. In our training session, we heard from my fellow engineers, scientists, and technologists from 3M, Ecolab, Medtronic, MN Guard, and Seagate, about what motivated them to be a mentor, and all had similar experiences. Most often it was a caring adult who took a strong interest in them, encouraged them, and shone a light on how exciting and rewarding working in STEM can be and guided us on that pathway to the careers we have today. I hope to continue my participation in this important program next school year, and I encourage STEM professionals around the country to partner with STARBASE in becoming a coach or mentor. It is a way to give back and to contribute to the next generation of innovators that the world is depending on. As a mentor, you will easily get as much out of the experience as the students do.



# From The Land of NO SLACK

## Base Operations- STEM Careers Tour

STARBASE Kingsley visiting 5th grade students have the amazing opportunity to tour the 173rd Fighter Wing Operations Squadron (OPS) at Kingsley Field ANG Base in Klamath Falls, Oregon. The 173rd Fighter Wing serves as the only schoolhouse currently training military pilots on the F-15 C & D Model fighter jets, in the United States.

Their mission: Produce the best air-to-air combat pilots in the world.

These STEM Career Tours offer an exciting experience for STARBASE Students to see where Air Force and Air Guard Student and Instructor Pilots come each day to prepare for their training flight missions. At the OPS Desk, the 5th graders are taught about the weather impacts on flight and how weather monitoring and radar tracking systems are used in planning flight missions. They are shown live maps depicting both civilian and military aircraft radar-tracked around the world.

While attending STARBASE, Students interact with a multitude of Kingsley Field Servicemembers. They can ask questions of the STEM professionals on Base, including the F-15 Pilots and those supporting their mission. The STARBASE youth are inspired by the fact that just like them, the training pilots are also students and are at Kingsley Field to learn.

Additionally, the 5th graders have the option to get up close and personal with one of Kingsley Field's F-15 flight simulators, where they get to see what the inside of a cockpit looks like.

The STARBASE Kingsley 173FW Operations Squadron Tour and other site-specific STEM-Career Visits offer STARBASE Students the opportunity to gain first-hand exposure and insight into many STEM (Science, Technology, Engineering and Math) career paths available to them. They are the next generation of innovators and aviators, so the support of local Servicemembers sharing their time and career knowledge with the students who attend STARBASE is much appreciated and valued.



## A Call for Participation

Throughout the year, this newsletter will continue to spotlight the achievements, partnerships, and tips of the participants of the DoD STARBASE program. Please share your achievements, success stories, and helpful tips with us at [email@dodstarbase.org](mailto:email@dodstarbase.org).