

**Air & Space Forces Association (AFA) 2023
National Award for CAP Outstanding AE Cadet:
Cadet Major Annika Santhanam
NER-NJ-102 Capt Bud Jackson Composite Squadron**



C/Maj Annika Santhanam has been the Cadet Deputy Commander of Aerospace/STEM in the Capt “Bud” Jackson Composite Squadron. C/Maj Santhanam has worked in her role as CDC and her previous role as the Deputy in Aerospace/STEM to advance the AE-STEM education of the cadets in her squadron and organize outreach efforts to expand education to other squadrons in the NJ Wing. Her work in her squadron and community is detailed below for the 2022 year which was submitted in January 2023 for the 2023 award:

- 1- C/Maj Santhanam has worked to administer her squadron's AE-STEM Cycle. This program involves a set of classes taught for cadets - by cadets and senior members - about a variety of Aerospace and STEM topics. The program has run for four cycles so far, and C/Maj Santhanam has helped administrate Cycles 2-4. In the current AE-STEM Cycle 4, classes

were designed to meet the cadets' career path interests. Cadets were able to state what career path they're interested in, and from there classes were selected to meet these interests. Cadets and senior members had the opportunity to design classes that they'd like to teach in order to satisfy the interests of the cadets. C/Maj Santhanam has supervised and designed the process of gauging cadet interest, verifying proposed lessons and classes, and designing the final class and instructor list for the Cycle. These classes include a Model Rocketry class that allows students to work toward earning the Rocketry Badges in the program and learn more about rocketry in the class during the weekly meetings. The other 9 classes in Cycle 4 include Flight Simulators and the History of Planes, Biomed, Military Technology, Quadcopters, Forensics, Cybersecurity, Machine Learning with Python, Website Development, and a StellarXplorers class to train the cadets participating in AFA's STLX program. Each of the classes contain hands-on activities during the lessons to engage students, and C/Maj Santhanam is working with the classes to create a CAPSTONE project for each class that allows the cadets to create a final project or presentation to showcase what they have learned over the course of the cycle

Cycle 3 Teams: Arduino, Biomed, Flight Simulators, DNA Sequencing, Model Rocketry, Quadcopters, Communication Theory, C Programming, Forensics, Military Technology

Cycle 4 Teams: Model Rocketry, Flight Simulators and the History of Planes, Biomed, Military Technology, Quadcopters, Forensics, Cybersecurity, Machine Learning with Python, Website Development, StellarXplorers Location: John P. Stevens High School

- 2- In her role as CDC of AE-STEM, C/Santhanam is also working to organize squadron AE-STEM outreach events through the AE-STEM Programs Branch in the squadron. C/Santhanam is currently supervising the leaders of the branch to develop plans for outreach to other squadrons about increasing AE-STEM participation in their squadrons, and even plans to create outreach for cybersecurity and AFA's CyberPatriot information to other squadrons. As of this submission in January 2023, an outreach event was planned and held on December 11th, 2022 --- a virtual watch party for the Artemis Splashdown. C/Maj Santhanam worked with cadets in the AE-STEM branches to create a presentation and engaging activities to disseminate information on the splashdown to cadets throughout the NJ. Wing The event achieved participation from cadets in five other squadrons along with cadets from our own NJ-102. C/Maj Santhanam and the cadets in her AE-STEM Branch are planning to continue to try and hold more watch parties and further outreach events as more AE events arise.
- 3- In 2022, C/Maj Santhanam also worked in several squadron outreach opportunities. The first of these opportunities came with participating in the Association of Old Crows Electromagnetic Spectrum Video Creation Competition. C/Maj Santhanam worked with a fellow cadet to record and edit an engaging video informing viewers on what the Electromagnetic Spectrum is and why it's important in our daily lives. The video won

second place in the competition alongside another video from the squadron, bringing in \$1000 per video for the squadron, which went toward funding squadron computers. Additionally, C/Maj Santhanam was part of the AFA's CyberPatriot outreach presentation for the Northeast Region Conference, designing a cybersecurity lesson plan that attendees and AEMs could take with them and bring back to students and their squadrons. Additionally, C/Maj Santhanam worked as part of a team to participate in the Aerospace competition part of the conference. C/Maj Santhanam and her team brainstormed a way to use small robots or drones to solve the problem of demining, and C/Maj Santhanam worked to research and design the solution using drone deployment of chemical neutralizers for landmines. This presentation won the competition at the conference and won a quadcopter for the squadron's use. The squadron gained valuable materials that has allowed it to continue AE-STEM education for cadets, and through the CyberPatriot booth at the conference, we were able to share the squadron's knowledge with other squadrons across the Northeast Region

--- Association of Old Crows Member Appreciation Dinner April 9, 2022

- 4- Finally, C/Maj Santhanam has worked outside the squadron to increase AE-STEM education in her community. In her high school, C/Capt Santhanam is on the executive board for the Cyberhawks technology club, instructing students on App Development within her school. She has taught for three years as of now and is working to teach students how to develop iOS apps using Swift and Xcode. Additionally, C/Maj Santhanam is the CTO and co-founder of her company, Likeable STEM, in which she has worked in the past year to hold workshops on topics including Python, Animation, Data Science, and more for free for students in schools and libraries. She has also presented at various webinars for teachers, counselors, and universities across the country to educate them on the importance of AE-STEM education for K-12 students and how they can bring engaging learning to their schools and classrooms. She has also spread knowledge about Civil Air Patrol to counselors across various states to raise awareness of the program and opportunities within it, even sharing info about the AFA's CyberPatriot and StellarXplorers competitions. C/Maj Santhanam hopes to continue spreading knowledge of AE-STEM education and opportunities within Civil Air Patrol to open doors for students to engage further in AE-STEM in their schooling and in their future careers

---Cyberhawks- Location: John P. Stevens High School

Likeable STEM:

Location: Various, in-person and virtual

July-August 2022 - 2D/3D Digital Animation Summer Workshop, Piscataway Library

July 2022 - Digital Animation Demo, Metuchen Library

July 2022 - Build It Better Engineering Design Challenge, Piscataway Library

February- May 2022 - Partnership with Carnegie Mellon University - combining STEM with creativity in students' majors.

Awards and Decorations

Commander's Commendation: Regional - 2021

Frank Brewer Memorial Aerospace Excellence Award - 2021

AFA CyberPatriot Competitor - 2019-2023

High School Team A: Semifinals, 15th in the nation, 1st in NER, 1st in NJ, Platinum Round – 2022

Association of Old Crows EMS Video Creation Challenge - 2022

Phase II Squadron Cadet of the Year - 2021

Air Force Sergeant's Association NCO of the Year - 2022

Wright Brothers, Mitchell, and Earhart Achievement awards - 2020, 2021, 2022

Winner - NJWG AE Education Poster Design Challenge - 2022 NJWG Conference (poster visuals attached below)



C/Maj Santhanam in ABU Uniform, helping to distribute Senior Members to AE-STEM Classrooms



C/Santhanam on a powered Orientation Flight



AEROSPACE EDUCATION FOR CADETS!



Along with individual squadrons running AE-STEM programs for their cadets, CAP NHQ offers plenty of resources for cadets to increase their AE-STEM knowledge and further their interest in AE-STEM careers

AE-STEM Programs for Cadets!

- **CyberPatriot** - National cybersecurity competition for cadets
- **StellarXplorers** - National Space Design Competition
- **STEM Kits** for enhanced STEM learning
- Challenges like the **High Altitude Balloon Challenge!**



<--Remote Education Resources

CAP NHQ 'For Cadets' Page -->



<-- AE-STEM Lesson and Activity Resources

Resources for Cadets!

- Curriculum designed for K-12 students and cadets
- AE-STEM resources for Remote Education, allowing cadets to learn about various AE-STEM topics from home
- AE-STEM Lesson Resources, located on the CAP NHQ website

Find all of the above resources in the QR codes to the left!



AE OFFICERS



- Oversee the aerospace education of cadets and SMs
- Facilitate weekly aerospace current events discussion
- Support wing/region/national AE activities
- Encourage squadron level AE outreach programs in the community

Learn more about AE STEM Officers here! -->



What are the Benefits?

- Teach young cadets about fascinating Aerospace & STEM topics
- Foster stronger connections with individuals in the community
- Help cadets & the squadron win different awards (ex. AE Achievement Award)



You can even win grants from the Air Force Association (AFA) for your unit! -->





AEROSPACE EDUCATION MEMBER PROGRAM



- Open to informal and formal K-12 educators
- Part of the CAP National HQ Group
- One time, \$35 fee
- Help bring AE-STEM education to K-12 youth across the country!



<--Learn
about the
STEM kits
here!

Access all
free STEM
programs
here! -->



Gain access to...

- Free K-12 AE-STEM Books
- Free STEM Kits (scan QR code below for more information!)
- Aerospace Education Excellence Award (AEX) opportunities
- Aerospace Connections in Education (ACE) program for each grade level
- ACE Plus Adopt Program - CAP Squadrons can help teachers' classrooms
- **and even... the opportunity to go on a free Teacher Orientation Program flight! (TOP)**

Contact Information!

TOP Flights or AEM Payment: ae@capnhq.gov

STEM Kits: stem@capnhq.gov

AEX Program: aex@capnhq.gov

ACE Program: ace@capnhq.gov

ACE Plus Adopt Program: adopt@capnhq.gov



**AE Program Overview - 2021, accessed
from CAP NHQ Aerospace Education
Educators page**

Information source: <https://www.gocivilairpatrol.com/programs/aerospace-education/for-educators>