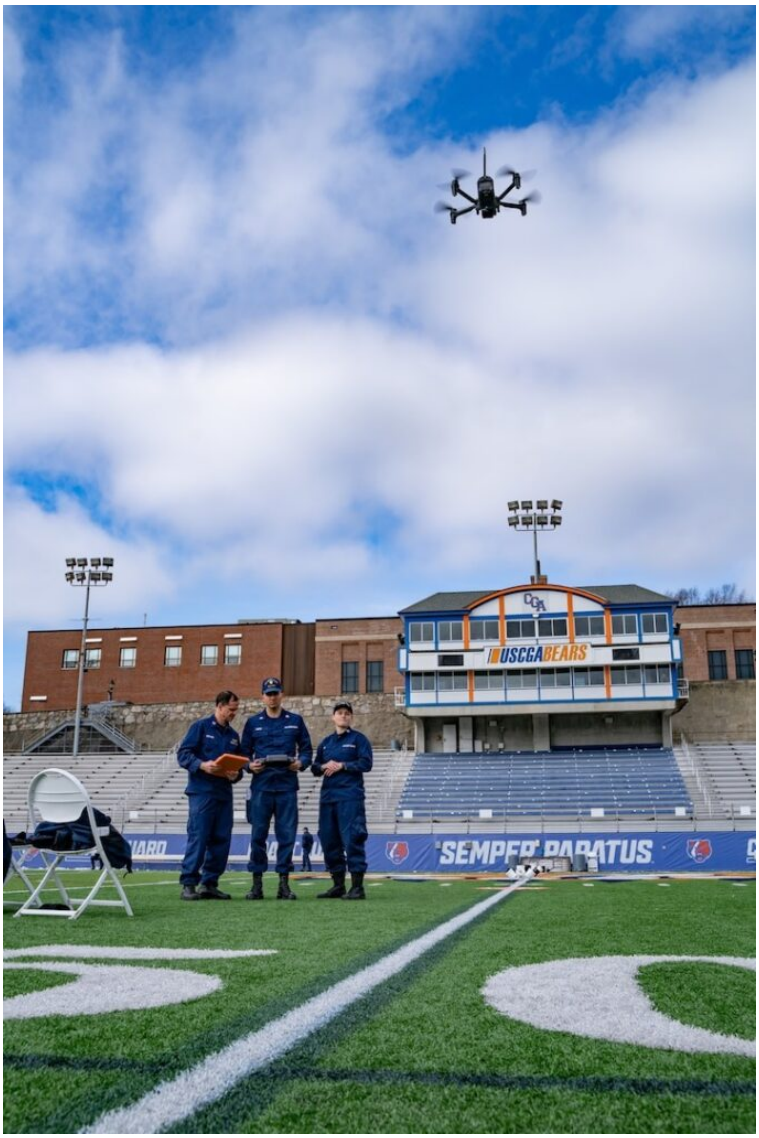
Unmanned Systems Help Coast Guard Members Navigate the Future



By David Santos, Coast Guard Academy External Affairs, March 27, 2024

U.S. Coast Guard leaders envision a future where Unmanned Aerial Systems (UAS) launched from Coast Guard cutters monitor air and surface contacts or fly autonomously inside large ships to inspect vessel tanks and other hazardous compartments.

Or, using sensors small enough to be installed on small UASs or Autonomous Underwater Vehicles (AUV), measure surface oil spill thickness and help direct assets to heavily impacted areas during oil spill responses.

These future scenarios are some of the strategic objectives outlined in the service's Unmanned Systems Strategic Plan, which was released last year.

The Coast Guard has been exploring the use of long, medium, and short range unmanned aerial systems since 2008 to provide a cost effective way to increase the operational presence of the service in an increasingly complex maritime environment.

Today cadets, faculty, and staff members at the U.S. Coast Guard Academy are taking the next step in helping to make this vision of the future a reality.

Capt. Brian Maggi and retired Capt. Daniel Burbank, faculty members from the Academy's Engineering Department, are helping to build a network of licensed drone operators. Their goal is to increase the number of Coast Guard members capable of using the technology in the fleet to help bridge the gap between the huge responsibilities the service is tasked with and the limited resources it is given.

As qualified Short Range Unmanned Aerial System (SR-UAS) Instructor Pilots, Maggi and Burbank are currently teaching a course to help a wide range of Academy personnel complete all the requirements to earn the Coast Guard SR-UAS qualification by the end of the semester.

"The initial solicitation for this course resulted in 60 cadet responses," Maggi said. "Many of our cadets are already experienced UAS pilots and know the capabilities of these systems better than we do. As Instructor Pilots, we can empower this group to help the Coast Guard innovate how UAS are integrated into operations and mission support. For the

cadets and Coast Guard personnel with limited or no experience, the goal is to foster their curiosity to inspire them to grow into this community and create awareness of how these systems may be a force multiplier for all Coast Guard missions."

"It's very inspiring to see how quickly the cadets learn how to precisely fly the drones and how to use the high resolution electro-optical and infrared imagers for target detection and identification," Burbank said. "They've got great 'stick and rudder' flying skills," he adds, "and are innovative in the ways they use the dozens of flight and imagery modes to get the most benefit from system capabilities."

Future plans call for establishing a 3-credit course that would teach cadets how to acquire imagery and video for engineering, science, and Coast Guard mission support. From there an expansion into the Cyber Systems and Operations Research & Data Analytics majors is planned to support the use of this technology in a variety of Coast Guard missions.

"Having come from an organization where human operators routinely use robotic systems to augment and extend their reach and vision, this feels much the same," said Burbank, who completed several spaceflight missions as one of three Astronauts who have graduated from the Academy. "These systems with talented and trained humans-in-the-loop will make the Coast Guard much more effective just as they do NASA."

As our maritime infrastructure and environment becomes more complex, Coast Guard personnel will be ready to employ unmanned systems to advance the safety and security of U.S. ports and waterways.