AeroTHON 2025

Calling All College and University Students!

Are you passionate about drones and eager to push the boundaries of innovation? Don't miss your chance to participate in the next edition of UNCREWED AIRCRAFT SYTEM (UAS) DESIGN, BUILD AND FLY CONTEST! This exciting event is open to college students from all disciplines who are ready to take on the challenge of designing and building their own UAS.

Competition Overview:

In this competition, students participant will have the opportunity to showcase their skills by designing a drone capable of performing advanced tasks. The competition consists of preliminary design review (Phase-I) and Final Flight Testing (Phase-II). The UAS shall be designed to perform two missions and the same shall be demonstrated during Phase-II of the event. The Missions are described here.

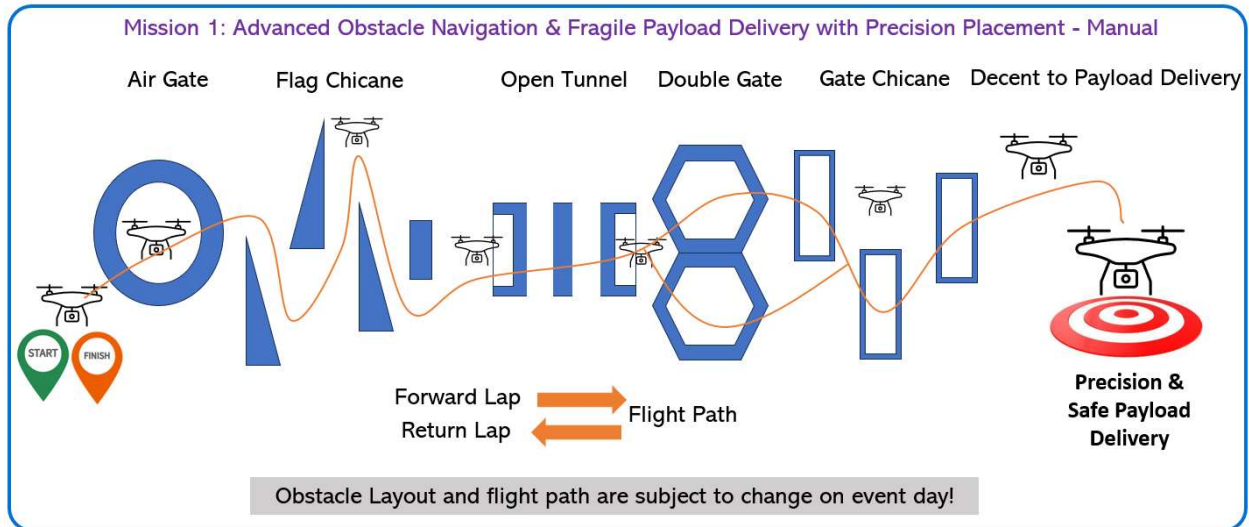### Mission 1: Advanced Obstacle Navigation & Fragile Payload Delivery with Precision Placement - Manual

Mission Details:

- In this mission, the drone must transport a fragile, preloaded payload through a challenging course filled with static obstacles such as walls, barriers, and narrow passages. The primary objective is to navigate these obstacles with high precision while ensuring the payload remains undamaged.

- Upon reaching the target zone, the UAS must land carefully and place the fragile payload on the ground without causing any damage to the payload. After the successful placement, the UAS must then return to the takeoff point or designated home base, ensuring safe and efficient navigation back through the course. The mission is complete once the payload is placed securely, and the UAS successfully returns to the home base.

Mission Tasks:

- **Fragile Payload Handling:** Transport the fragile item securely throughout the course, ensuring no damage occurs during flight.

- **Static Obstacle Navigation:** Navigate a course filled with static obstacles that require careful planning and precise flight adjustments.

- **Environmental Challenges:** Overcome environmental factors such as wind or lighting changes that could affect stability and visibility, requiring quick adaptation.

- **Precision Payload Placement:** Land and carefully place the payload in the target zone, ensuring gentle and secure placement.

- **Return to Home:** After the payload is placed, navigate the course back to the home base or takeoff point, avoiding obstacles and ensuring a safe return.

- **Time Constraints:** Complete the mission within a set time limit, adding pressure and emphasizing the balance between speed, accuracy, and safety.


Mission 1: Advanced Obstacle Navigation & Fragile Payload Delivery with Precision Placement - Manual

Obstacle Layout and flight path are subject to change on event day!

Mission 2: Autonomous Object Classification, Disaster Situation Identification & Payload Drop

Mission Details:

- In this mission, the UAS will autonomously scan and classify objects within a predefined area using its sensors and onboard algorithms. The objects will vary in shape, size, color, and structure, and may be partially obscured, challenging the drone's detection and classification capabilities. After classifying the objects, the drone will move on to identify specific disaster situations within the same area, such as flooding, fire, or damaged infrastructure.

- Once the disaster situation is identified, the drone will autonomously deliver a medical supply or food payload to the target zone. The drone must accurately navigate to the identified disaster area, determine the optimal drop location, decent to a 10-meter altitude from the mission altitude of 15-meter and then drop the payload, ensuring that it reaches the target area safely and efficient navigation back to home or take off point maintaining 15-meter altitude.

Mission Tasks:

- **Object Classification:** Scan and classify various objects in the environment based on their features (e.g., shapes (2D & 3D), color, size).
- **Disaster Situation Identification:** Detect disaster conditions, such as flooding, fire, or damage, through image sensing and analysis.
- **Payload Delivery:** Based on the identified disaster, deliver medical supplies or food to the target zone by performing a precise drop from a 10-meter altitude while maintaining the overall mission altitude of 15-meter.
- **Autonomous Operation:** The mission emphasizes full autonomy, requiring the drone to complete the entire process—from object classification to disaster identification to payload delivery—without manual intervention.

Mission 2: Autonomous Object Classification, Disaster Situation Identification & Payload Drop
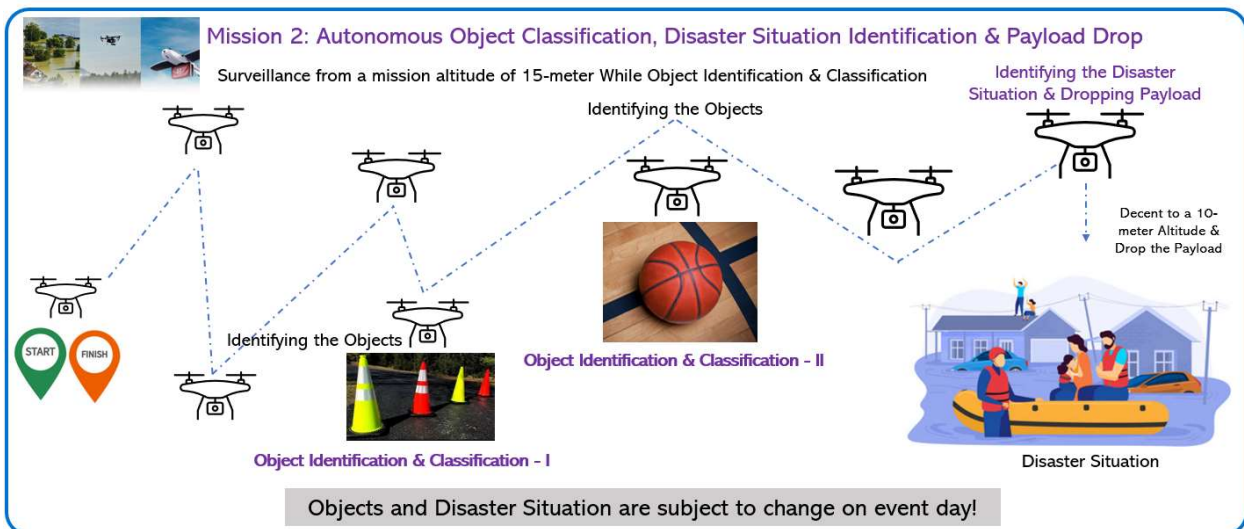
Why Participate?

Prizes: Win exciting prizes, including cash rewards, and certificates of achievement.

Networking: Connect with like-minded students/peers, industry professionals, and UAS enthusiasts.

Experience: Gain valuable hands-on experience in drone technology, design, and competition.

Registration Information:

To register for the competition or to learn more about the rules and guidelines, visit https://saeindia.org/aerothon2025/

Don't miss out on this opportunity to showcase your creativity, innovation, and technical skills!

Registration window: January 30, 2025 - March 16, 2025

Further details about the event:

For further details about the event, deadline, schedules, contact points, etc., please visit the website.