فـــدز FEDS | DRONE ACADEMY

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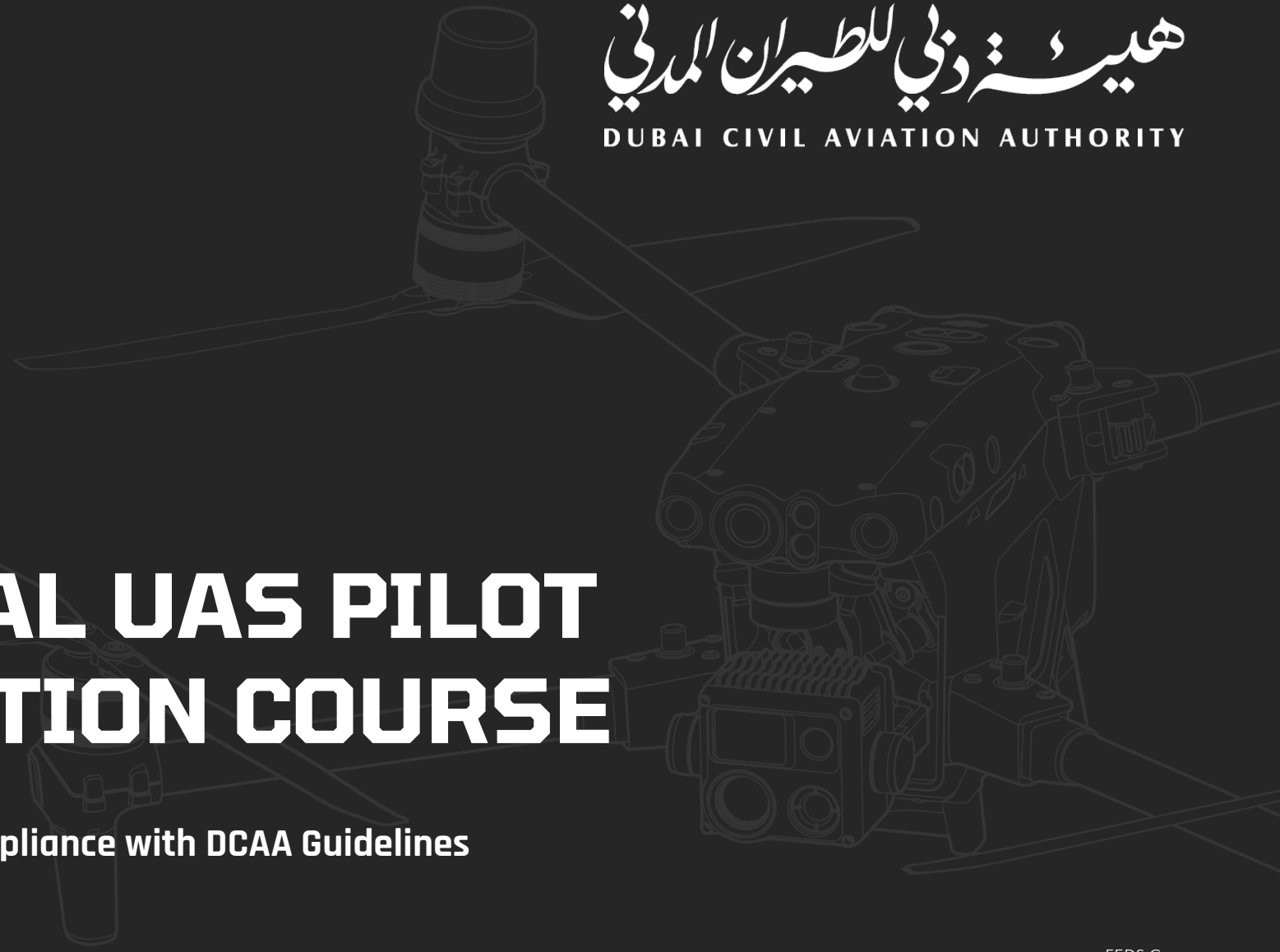

Foundation Course 01A.DCAA – V.07/08/2025

RECREATIONAL UAS PILOT RECERTIFICATION COURSE

Comprehensive Online Training in Compliance with DCAA Guidelines

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Learning Objective

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By completing this course, you will be able to:

1. Understand updated DCAA rules for recreational drone use in Dubai
2. Identify and fly only within approved Green Zones using official maps
3. Recognize key UAS components and safe handling procedures
4. Follow best practices for safe and legal drone operations
5. Avoid common violations and restricted zones
6. Manage signal loss using failsafe features effectively
7. Pass the final assessment to renew your DCAA certification

Introduction

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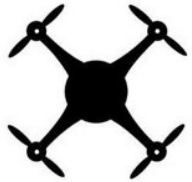
A UAS, or Unmanned Aircraft System, refers to an aircraft that is operated remotely by a pilot using a radio control system. Also commonly known as:

- Drone
- UAV (Unmanned Aerial Vehicle)
- RPAS (Remotely Piloted Aircraft System)

Fixed-Wing



Multirotor

UAS Categories

1. Based on weight or MTOW (Maximum Take Off Weight): This refers to the total weight including maximum payload of the aircraft.
2. Based on UAS wing type: The two most common forms of UAS are
   a. Multirotor: Vertical take off and landing system
   b. Fixed-wing: Takes off from a runway or launch pad, has wings like a conventional airplane

By wing type

1. Multi-rotor
2. Fixed-wing
3. Single-rotor helicopter
4. Fixed-wing hybrid VTOL

By weight (MTOW)

1. Lightweight
2. Middleweight
3. Heavy-lift

UAS Hardware and Components (Multirotor)

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Battery

UAS systems are typically powered by LiPo (Lithium Polymer) batteries also installed on the mainframe.

Propeller

Propellers create the lift needed for the UAS. They are of 2 types (Clockwise and Counterclockwise).

Motor

The motors are essential for generating thrust and enabling flight. Drone motors are typically brushless DC motors

Frame

This component connects all of the other components. Frames can be of various size, types or shapes.

ESC (Electronic Speed Controller)

ESC is a crucial electronic circuit that regulates the speed and direction of the motors.

Flight Controller

The flight controller is most commonly installed on the main frame, which acts as the brain of the drone.

Radio Control

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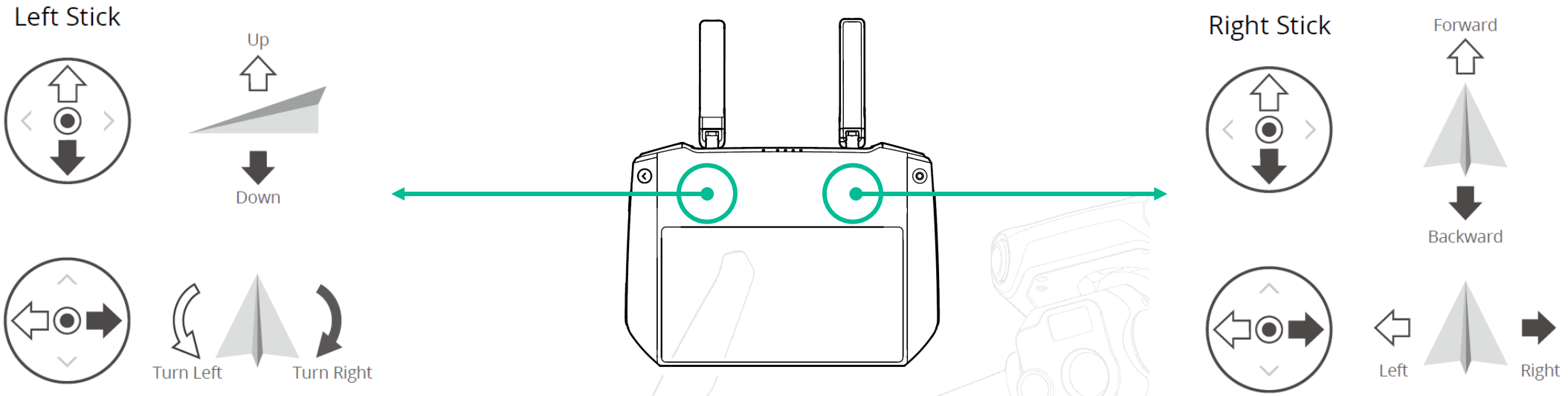
Throttle

Controls the altitude (up and down). Increasing throttle makes the drone rise; decreasing makes it descend.

Pitch

Tilts the drone forward or backward. Used to move the drone forward or backward.



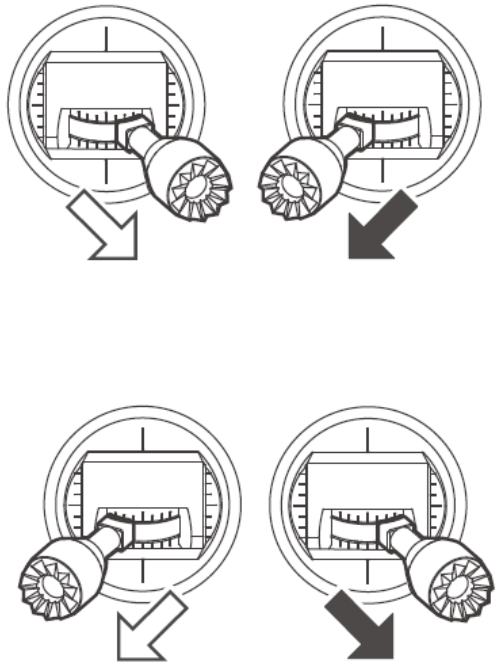
Yaw

Rotates the drone left or right (turns the nose). It spins around the vertical axis.

Roll

Tilts the drone left or right (side to side). Used to move sideways (left/right).

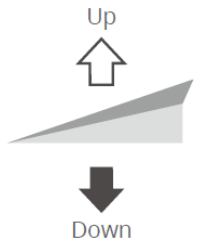
Starting the Motor

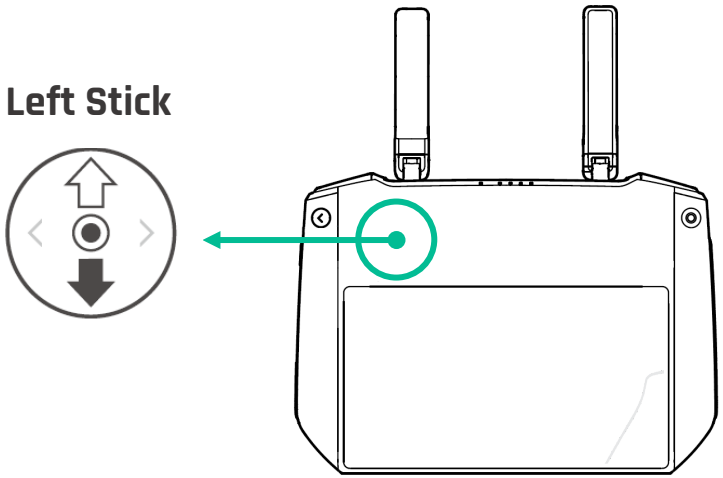


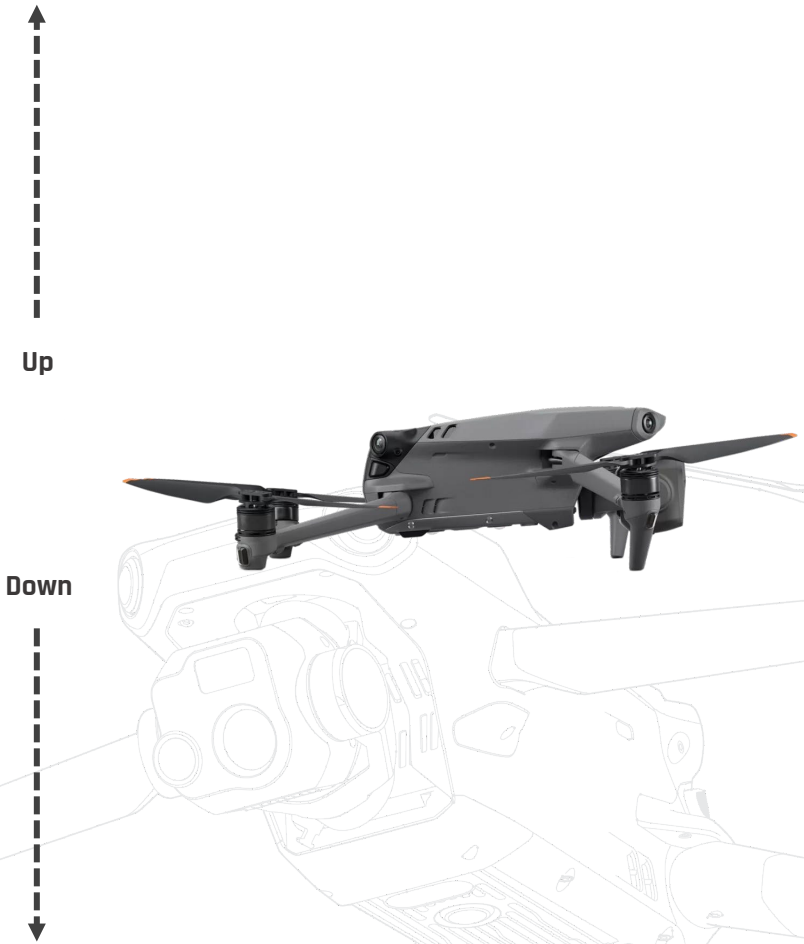
Starting the Motors

A Combination Stick Command (CSC) is used to start the motors. Push both sticks to the inner or outer bottom corners to start the motors. Once the motors start spinning, release both sticks simultaneously.

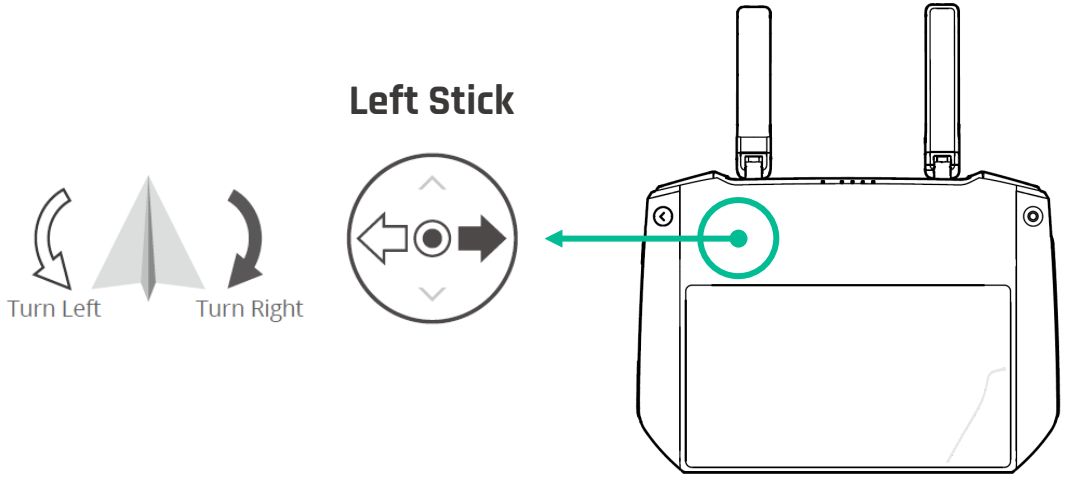
Throttle



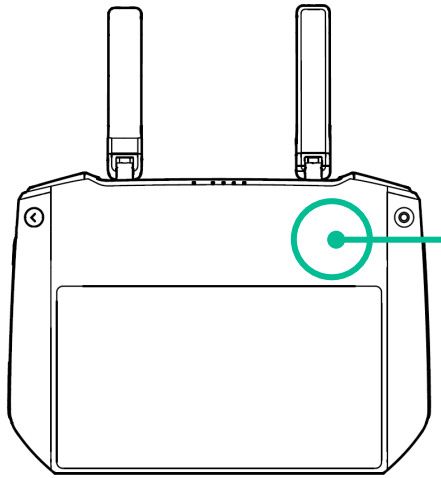




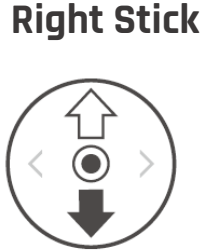
Yaw



Pitch



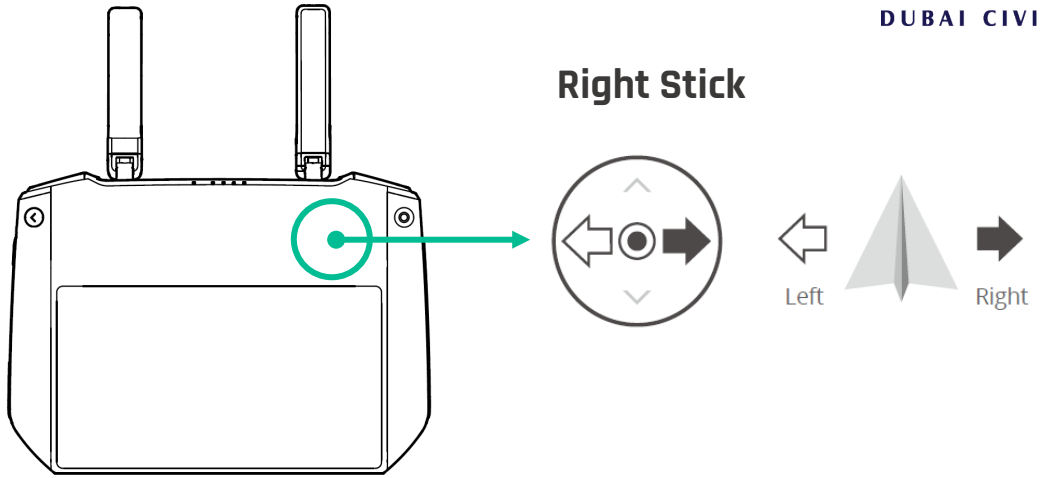
Right Stick



Backward

Forward

Roll



UAS Operation

When flying an Unmanned Aircraft System (UAS), it is critical to always maintain Visual Line of Sight (VLOS). This means the pilot must be able to see the aircraft with unaided vision throughout the entire flight.

Maintaining VLOS is essential for:

- Safe flight operations
- Avoiding obstacles and hazards
- Maintaining a strong, uninterrupted connection between the remote controller and the aircraft

If an obstacle blocks the line between the aircraft and the controller, radio communication may be lost instantly, leading to a potential loss of control.

Pro Tips: Fly above the tallest obstruction in your flight area but always stay within the legal altitude limits!

Figure A

Proper VLOS flight path with a clear, uninterrupted signal

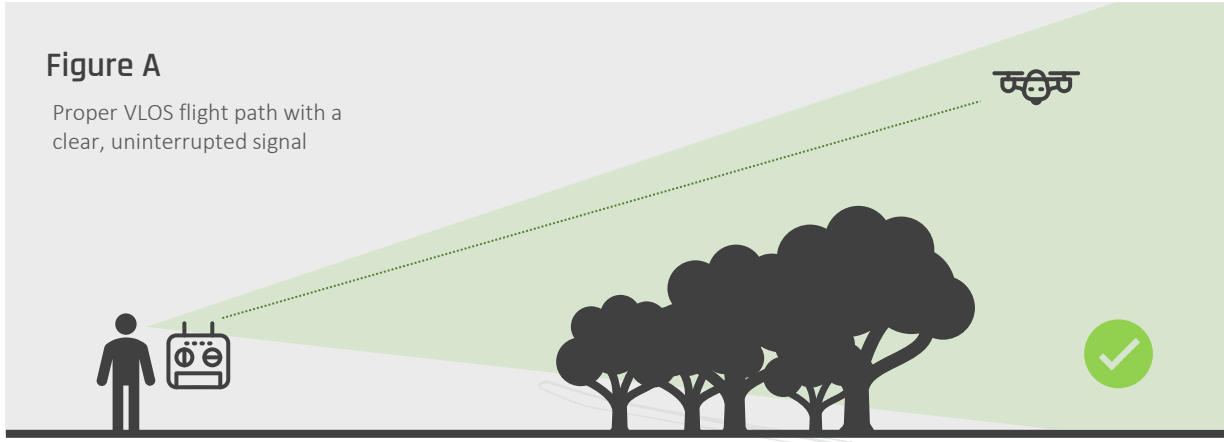


Figure B

Dangerous situation where the signal is obstructed, causing communication loss between the aircraft and the pilot.

Failsafe and Recovery

Figure B

Figure B

If a UAS loses connection with the remote controller, most flight controllers offer one of the following recovery actions:

1. Immediate Landing

As shown in Figure A, the aircraft will land immediately at its current location when this feature is activated.

2. Return to Home (RTH)

As shown in Figure B, the aircraft will ascend to a safe altitude and then return to its take-off point using the GPS coordinates recorded at launch, before landing automatically.

Failsafe and Recovery

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C2 Link Lost – what you can do:

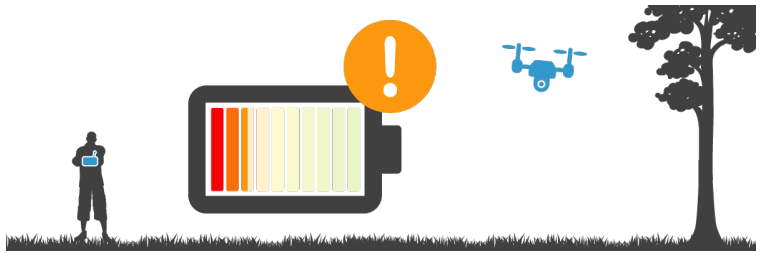
The link between a drone and the remote controller is called the C2 link (Command and Control). When the link between the drone and the remote controller is lost, you are not able to control your drone.

1. First try to re-establish the link by moving closer to the drone
2. If this does not work, try to adjust the antennas so that they are in the optimal position in relation to the location of the drone to re-establish the link (read the instructions from the manufacturer beforehand!)
3. Depending on the type of drone, try to turn the application then the remote controller off and then back on
4. If none of this works to re-establish the link (and provided the drone is equipped and all parameters have been set correctly prior the flight) the failsafe - RTH should bring your drone back home.

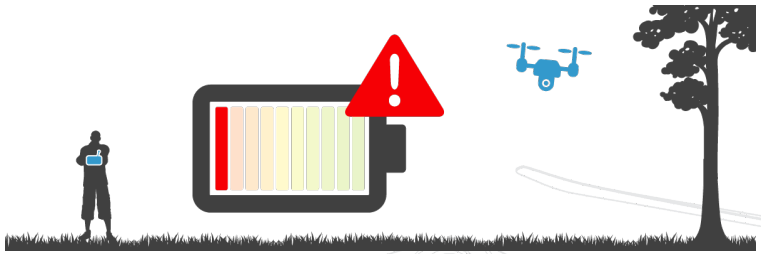
Failsafe and Recovery

Low battery situation

A low battery situation happens when the charge level of the battery is so low that it prevents the drone from flying or completing its flight. You should have clear limits that you set when flying a drone that matches your operation.

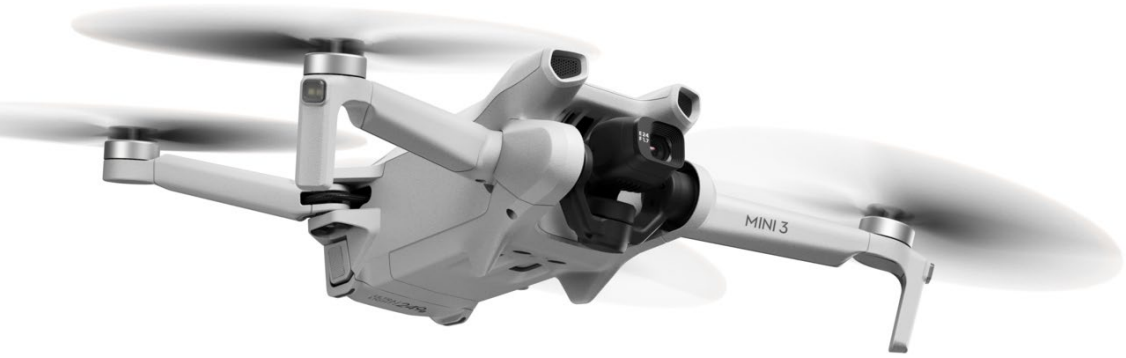


25% battery level as a 'low battery warning': When the low battery warning level is reached, stop the operation and bring the drone back to the landing location



10% as an 'extremely low warning': When the extremely low warning level is reached, the operation should be stopped even if it is not at the landing location

Failsafe and Recovery



Position uncertainty

Position uncertainty happens when your drone is flying quite far away from you, and although you still have it in VLOS, it is very difficult to work out its attitude and orientation.

1. Stay calm! There are easy solutions, even without camera!
2. If possible, climb the drone so that you have good visual contact and to ensure that it is clear of obstacles (but stay below allowed altitude)
3. With a rotary wing drone, pitch forward only and note the direction the drone flies to
4. Yaw in one direction only, by increment
5. Pitch forward again to reconfirm the direction
6. Repeat until you are sure of the direction that drone flies in and you are able to control its flight path to return to you
7. The same applies for fixed-wing drones but since there must be continuous forward motion, only the yaw should be used, by increment and at a stable altitude

Before You Fly: Pre-flight Checklist

Equipment Check

1. Batteries are fully charged and undamaged
2. Propellers are secure and in good condition
3. Radio control link is tested and functioning properly
4. Drone is clearly marked with registration number

Is my drone ready to fly?

Before every flight you should check your drone to make sure that its components are in good working order. Flying a drone that has degraded, or defective components can comprise safety.

Propeller

In addition to any damaged propeller blades, the balancing system should also be in good working order.

Frame

Remember that the airframe or body of the drone is subject to significant load during flight. Even if you find a small crack in the airframe it should be repaired before you fly it again!

Batteries

Usually, when they are reaching the end of life, a Li-Po battery tends to swell and overheat. At this point, the battery must be replaced. An end-of-life battery can explode and cause a fire!

Controller

The drone controller should always be powered / charged for the timeframe of the operations. ALWAYS check the battery of your controller before flying!

Tips for Maintaining your Drone & Avoiding Common Mistakes

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Calibration
Regularly calibrate compass and IMU before flights

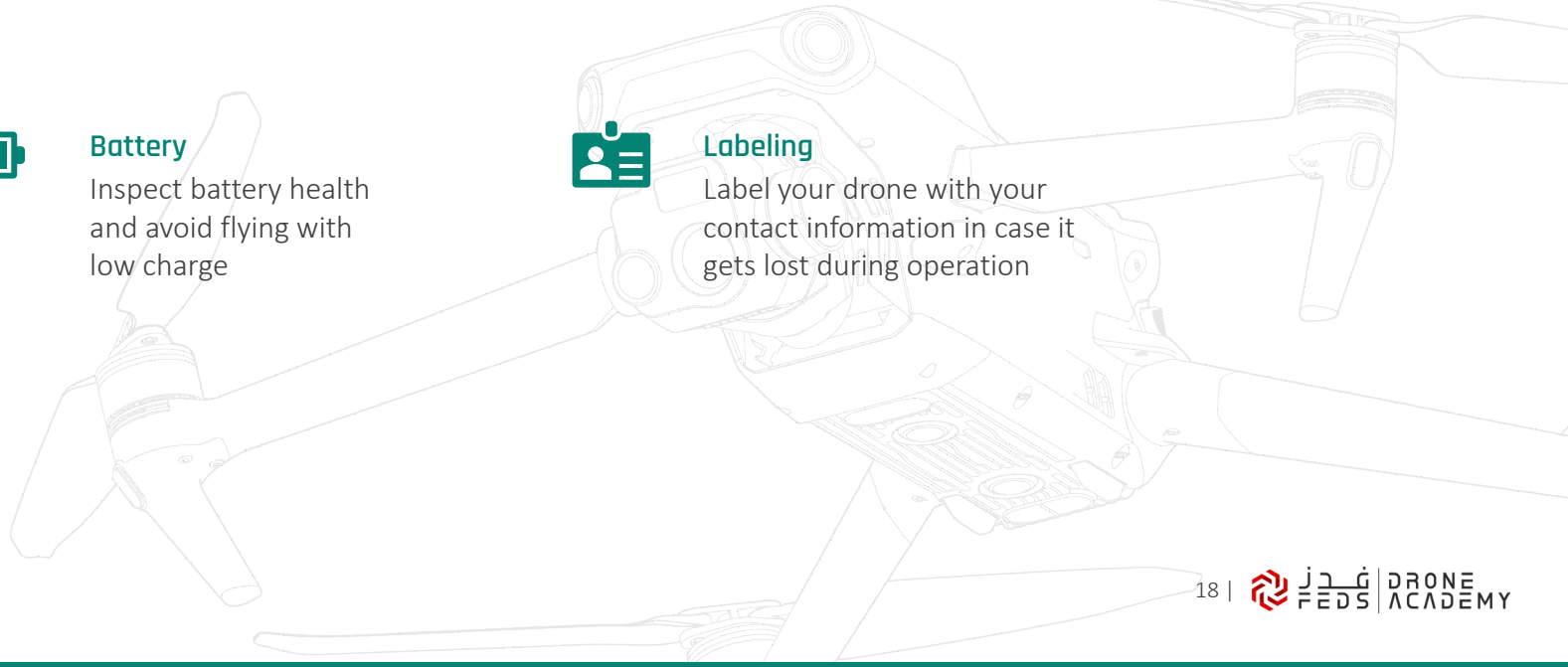
Drone Parts
Clean camera lens and check propellers for damage

GPS
Don’t rely solely on auto return-to-home in poor GPS conditions

Firmware
Keep firmware updated and check for app notifications

Battery
Inspect battery health and avoid flying with low charge

Labeling
Label your drone with your contact information in case it gets lost during operation



Updated Drone Regulations and Safety Standards

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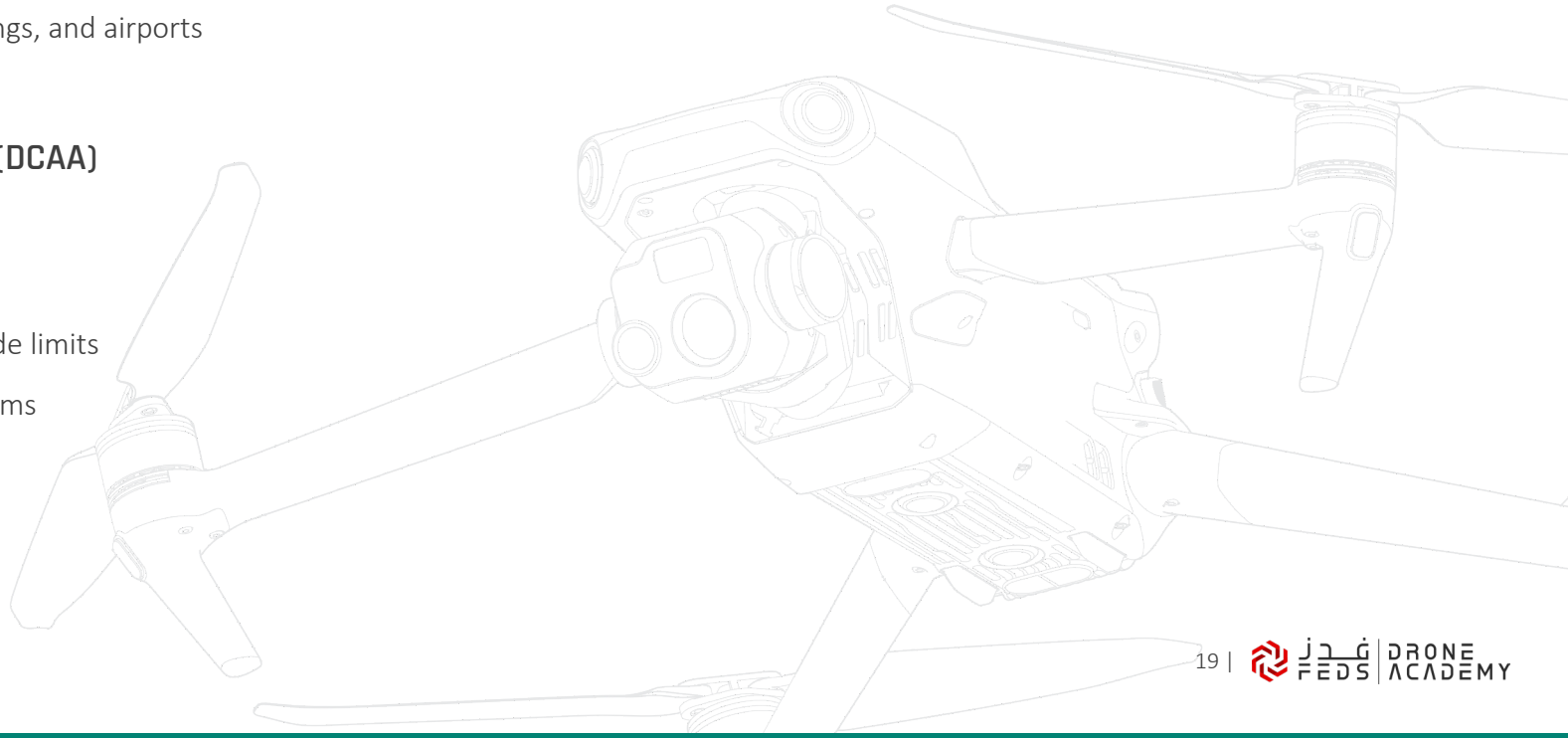
1. Key Updates to Drone Safety Guidelines in the UAE

- Night flying for recreational drones is strictly prohibited
- Operators must fly within designated Green Zones only
- In general maximum allowed altitude is 120 meters (400 feet) but also depends on each fly zones
- Use of drones in restricted or no-fly zones is penalized
- Drones must maintain a safe distance from people, buildings, and airports

2. Regulatory Entity - Dubai Civil Aviation Authority (DCAA)

- Governs all drone activities within the Emirate of Dubai
- Issues hobbyist and commercial drone approvals in Dubai
- Maintains approved flying zones (Green Zones) and altitude limits
- Enforces compliance through inspections and digital systems



Updated Drone Regulations and Safety Standards

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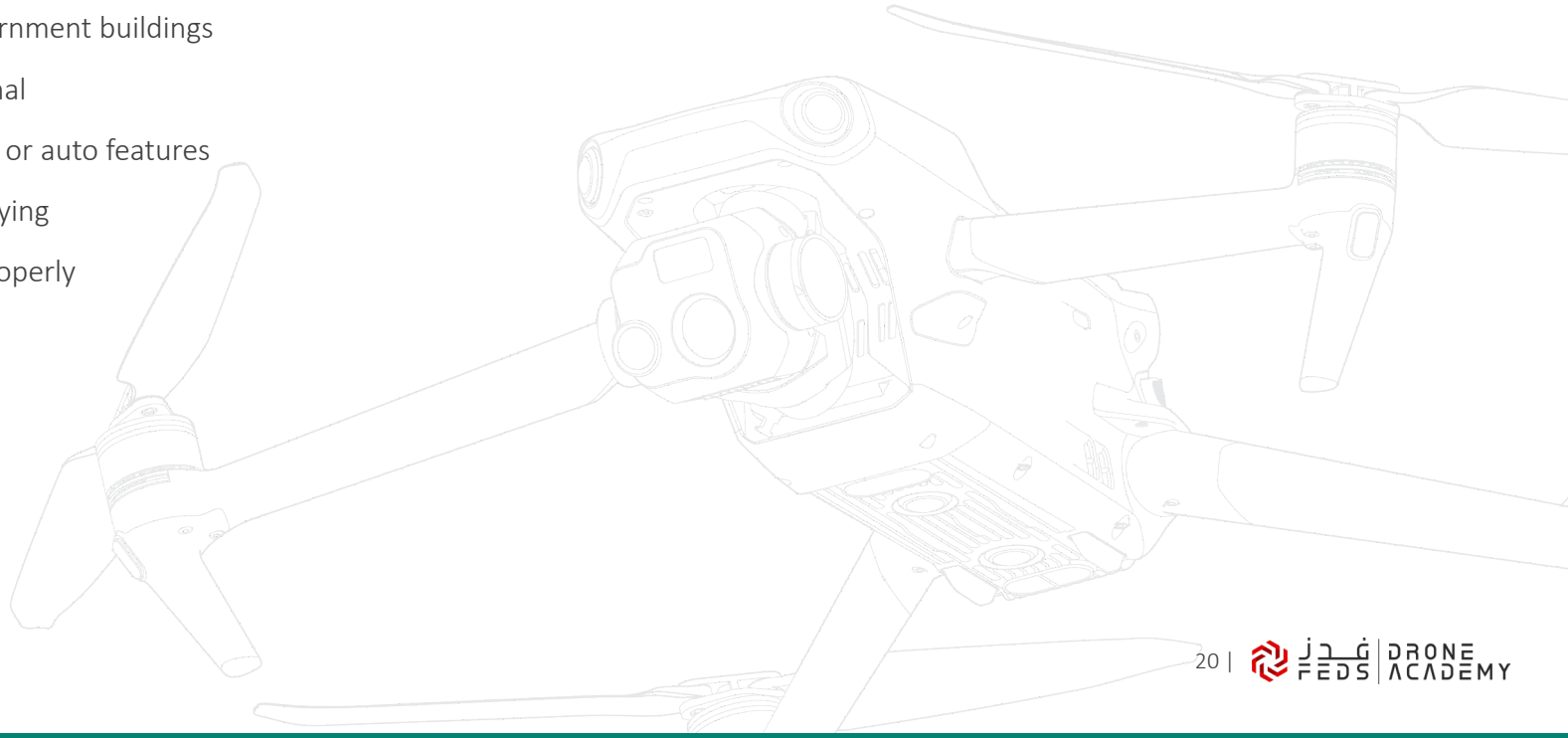
3. Safety Practices for Recreational Drone Flying

- Conduct pre-flight checks: battery levels, propeller condition, GPS signal, weather
- Always fly within Visual Line of Sight (VLOS) & Stay below the altitude limit unless authorized
- Avoid flying over people, vehicles, residential areas, or sensitive infrastructure
- To check fly zones – refer to DCAA UAS Zone Map (https://www.dcaa.gov.ae/drone-map) & DMS app
- Maintain safe distances from airports, heliports, and government buildings
- Immediately land the drone if it malfunctions or loses signal
- Keep firm control of the drone – do not rely solely on GPS or auto features
- Always carry registration proof and identification during flying
- Ensure the drone firmware is up to date and calibrated properly



Updated Drone Regulations and Safety Standards

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4. Importance of Maintaining Up-to-Date Certification

- Legal Requirement: Staying certified ensures you are legally allowed to operate drones in the UAE.
- Regulatory Compliance: Certification confirms that you understand and follow the latest rules and regulations.
- Improved Safety Awareness: Keeps your knowledge current on safety protocols and risk prevention practices.
- Avoids Penalties: Reduces the risk of fines, confiscation of equipment, or legal consequences.
- Boosts Operator Credibility: Demonstrates responsibility and professionalism as a drone hobbyist.
- Supports Public Trust and Airspace Safety: Certified pilots contribute to safer skies and better community confidence in drone use.

Designated Recreational Drone Flying Zones in Dubai

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- Recreational drone operations are only permitted in officially authorized flying zones, commonly referred to as Green Zones
- These areas are designated by DCAA (for Dubai) based on safety, public accessibility, and airspace structure
- Pilots must use approved apps such as DCAA website or DMS App to view real-time maps, fly zone boundaries, and any temporary restrictions
- Flying in unauthorized areas is strictly prohibited and may lead to penalties or legal action
- Zone availability is subject to change, and operators must verify status before every flight

Approved Recreational Drone Zones	Altitude Limitation
Within private property (inside approved zones)	Up to the height of the tallest structure on the property
Within private property (outside approved zones)	Not Allowed
Al Qudra Lakes	300 feet (91 meters)
Safa Park	200 feet (60 meters)
Jumeirah Beach	200 feet (60 meters)
The Palm Jumeirah	250 feet (76 meters)
Blue waters Island	200 feet (60 meters)
Dubai Design District	200 feet (60 meters)
Kite Beach	200 feet (60 meters)

Importance of Flying Within Designated Zones

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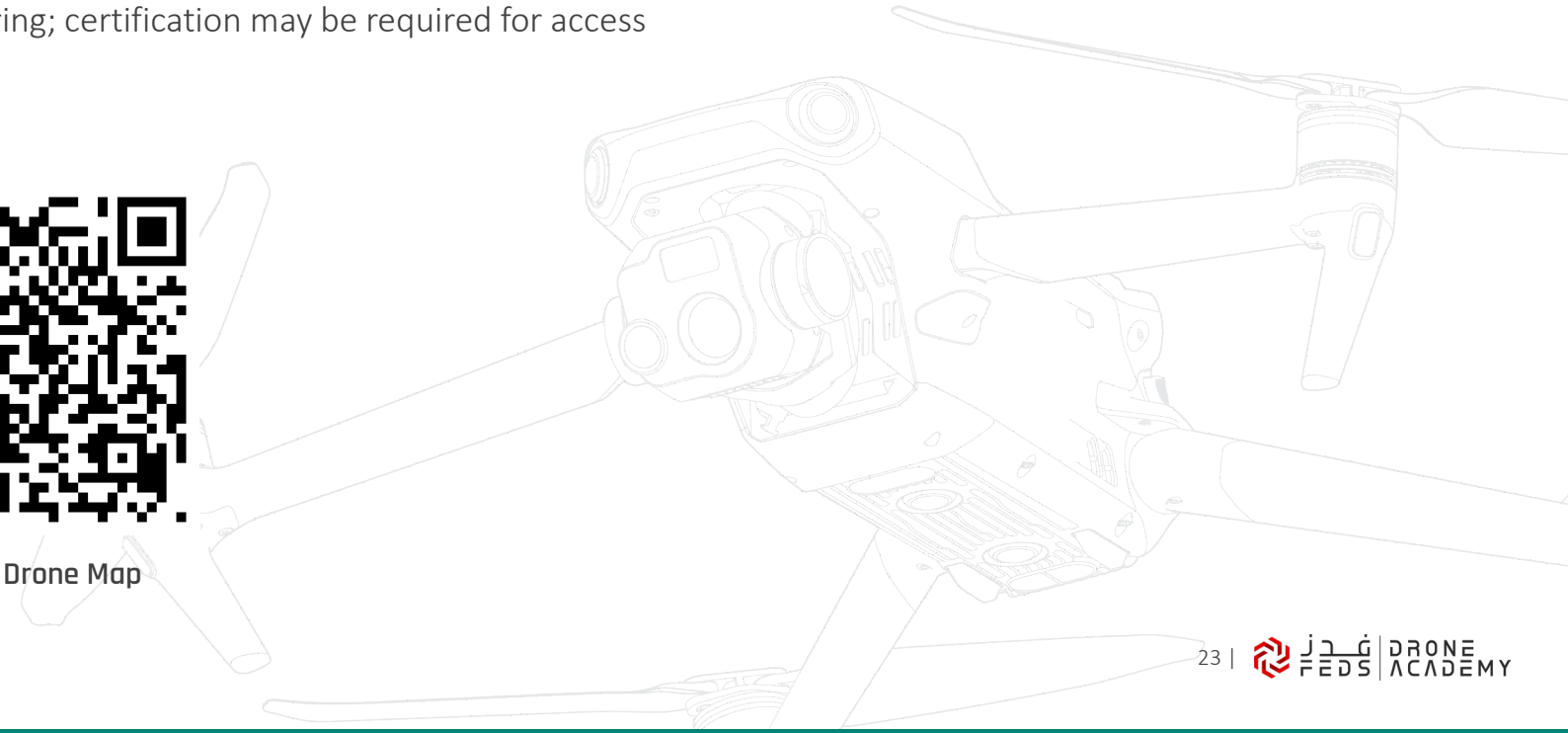
- Approved zones are chosen for public safety and minimal interference
- Helps avoid restricted areas such as airports, military zones, and residential areas
- Ensures compliance with local laws and promotes responsible flying
- Reduces the risk of injury, damage, or violations
- Some zones may have on-site signage or monitoring; certification may be required for access

DCAA - Publications

DCAA – Drone Map



DCAA Drone Registration Process (Dubai)

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- Registration is mandatory to fly a drone within Dubai or when traveling with your drone out of Dubai
- Registration must be completed via the official DCAA website: www.dcaa.gov.ae
- For guidelines visit: DCAA - Recreational Drone

Required Documents:

- Emirates ID (for UAE residents) or Passport copy (for tourists)
- Pilot certificate issued by a DCAA-approved academy
- Clear images of the drone showing its Serial Number (SN); Flight controller SN ; Remote controller SN

Weight Restrictions for Recreational Drones:

- Drones ≤ 5 kg allowed only in approved flying zones

Registration guideline

Where to Find the Service (DCAA Website)

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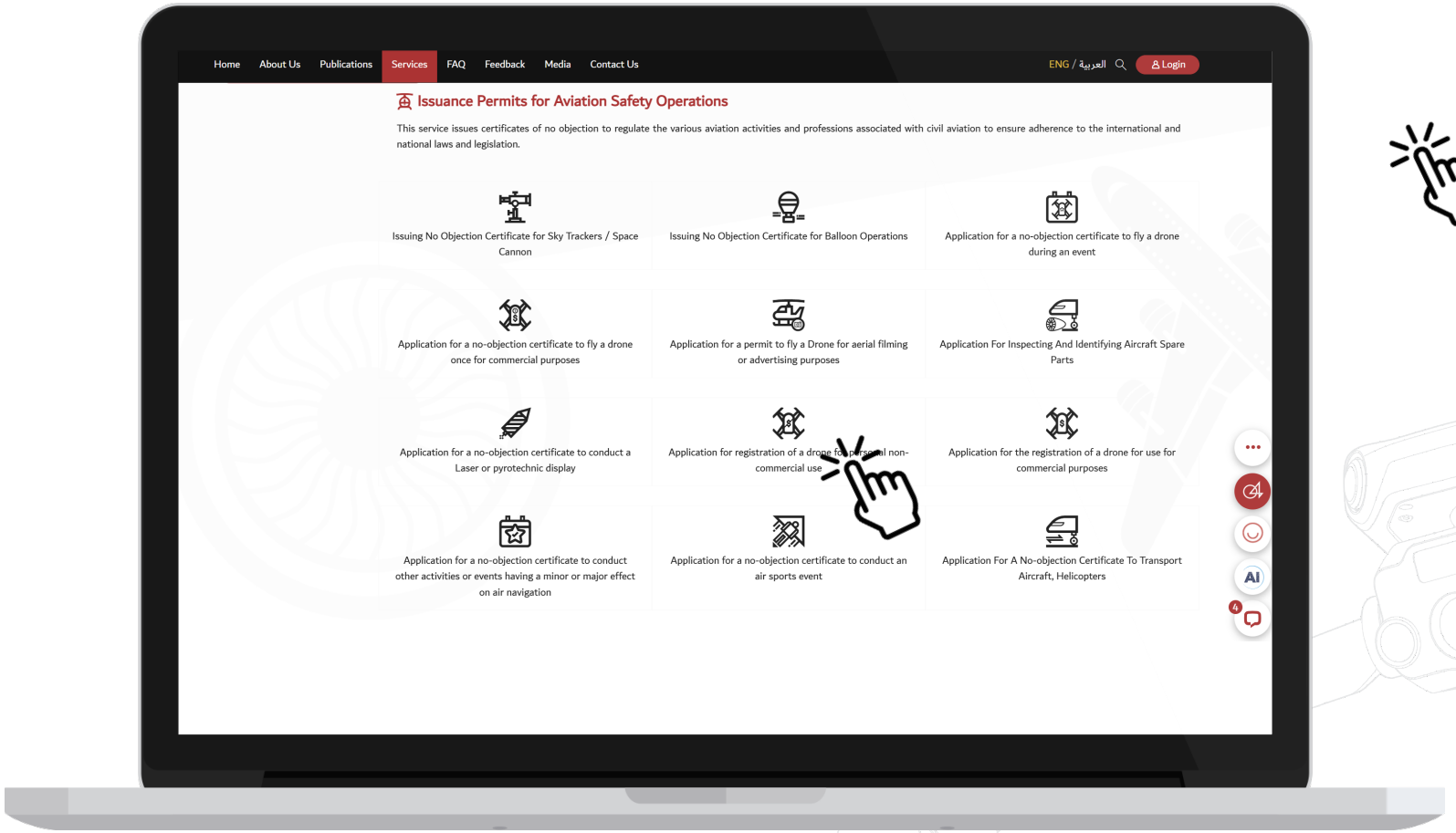

Apply for Application for registration of a drone for personal non-commercial use

Theoretical Evaluation

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This test is designed to assess your knowledge of safe drone operation, airspace rules, battery handling, emergency procedures, and responsible flying practices in accordance with DCAA regulations.

Total Questions	: 15 questions
Types	: Multiple Choice & Multiple Answer
Time Limit	: 30 minutes
Passing Score	: 80% (at least 12 correct answers)

- Read each question carefully.
- For multiple choice questions, select the single most appropriate answer.
- For multiple answer questions, select all answers that apply.
- You must answer all questions before submitting.
- No external references or assistance are allowed during the test.

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