COME FLY WITH ME!
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FAA Certified Unmanned Small Aircraft Systems Pilot

27 years in Education

Elementary-Post-Secondary experience
OBJECTIVES

To prepare you to understand drone technology/software

To understand the FAA rules/regulations for drones

To examine the different parts of the drone and how they are used

To perform a series of skills relevant to aerial photography

To learn some basic flight skills for taking photos
BASIC SAFETY/ETHICS: BEFORE YOU FLY APP

- Fly no higher than 400 feet and remain below any surrounding obstacles when possible.
- Keep your sUAS in eyesight at all times, and use an observer to assist if needed.
- Remain well clear of and do not interfere with manned aircraft operations, and you must see and avoid other aircraft and obstacles at all times.
- Do not intentionally fly over unprotected persons or moving vehicles, and remain at least 25 feet away from individuals and vulnerable property.
- Contact the airport or control tower before flying within five miles of an airport.
- Do not fly in adverse weather conditions such as in high winds or reduced visibility.
- Do not fly under the influence of alcohol or drugs.
- Ensure the operating environment is safe and that the operator is competent and proficient in the operation of the sUAS.
- Do not fly near or over sensitive infrastructure or property such as power stations, water treatment facilities, correctional facilities, heavily traveled roadways, government facilities, etc.
- Check and follow all local laws and ordinances before flying over private property.
- Do not conduct surveillance or photograph persons in areas where there is an expectation of privacy without the individual’s permission (see AMA’s privacy policy).
1. Propellers
2. Motors
3. Aircraft Status Indicator
4. Camera
5. Power Button
6. Antennas
7. Vision Positioning System
8. Flight Battery
9. Micro USB Port
10. Propeller Guards
TELLO APP: FREE ON ITUNES AND GOOGLE PLAY
- **R2+Y**: Take Off / Land
- **L2+Up**: Flips Forward
- **L2+Down**: Flips Back
- **L2+Left**: Flips Left
- **L2+Right**: Flips Right
- **R1**: Take Photo
- **L1**: Record video

- **R2**: Right
- **L2**: Left
- **Up**: Up
- **Down**: Down
BASICS

- Auto take off and landing
- Low battery protection
- Vision positioning system
- EZ shots
- 5MP photos
The Tello drone has a 13-minute flight-time and is able to transmit 720 HD video footage up to 300 feet away.

FLIGHT TIME

Fly your Ryze Tello drone to 100 ft+ (30 m) using a free app to adjust the altitude limit restricted by the Tello drone app (10 m). IMPORTANT: Must use a wifi extender to maintain control of the Tello at higher altitudes.
FLIGHT MODES

Record coordinated short videos with:

- Throw and Go
- 8D Flips
- Up and Away
- 360
- Circle
- Bounce mode
Flying the Tello Manually

The Tello has two flight speeds that you can select when flying the aircraft manually:

- **Slow (default)**: The maximum flight attitude angle is 9° and the maximum flight speed is 6.7 mph (10.8 kph).
- **Fast**: The maximum flight attitude angle is 25° and the maximum flight speed is 17.8 mph (28.8 kph).

When flying the Tello manually the aircraft utilizes its Vision Positioning System to automatically stabilize itself. If the conditions are such that the Vision Positioning System is unavailable the aircraft automatically changes to Attitude mode.
Bounce Mode

In Bounce mode the aircraft automatically flies up and down between 1.6 and 3.9 ft (0.5 and 1.2 m) above a flat surface. If the aircraft detects an object below it (such as your hand) it increases its altitude then continues flying up and down.
8D Flips

In 8D Flips the aircraft automatically flips in one of eight different directions.
Throw & Go lets you launch the aircraft by gently throwing it into the air.
EZ Shots

Using 360

In 360, the aircraft records a short video while rotating 360 degrees.
1. Press the power button once to turn the aircraft on. Launch the Tello app and tap 📷 to take off.
2. Tap 🌟 and then select 360. Read the information prompt and then select Start.
Using Circle

In Circle the aircraft records a short video while flying in a circle.

1. Press the power button once to turn the aircraft on. Launch the Tello app and tap 😊 to take off.
2. Tap 🌟 and then select Circle. Read the information prompt and then select Start.
Using Up & Away

In Up & Away the aircraft records a short video while flying upward and backward.
PROGRAMMING
PROGRAMMING LANGUAGES

- Python
- Raspberry Pi
- Swift playgrounds
BASIC COMMANDS

takeoff();
hover(5);
fly("forward", 20, "in");
flip("forward");
flip("left");
land();
CODING DASHBOARD
CLICK ON SHOW MISSION CODE
ACCESS THE CODE
BOX MISSION

- Takeoff
- Navigation
- Flip
- Loops
- Logic

- takeoff
- fly forward 60 in
- fly right 60 in
- fly backward 60 in
- fly left 60 in
- land
LOOP AND FLIP

Takeoff
- Navigation
- Flip
- Loops
- Logic
- Math
- Variables
- Land

takeoff
- flip forward
- flip backward
- flip left
- flip right
- flip forward
- flip backward
- flip left
- flip right
- flip forward
- flip backward
- flip left
- flip right
FOUR FLIPS REPEATED FIVE TIMES
REFACTORED BOX MISSION WITH LOOPS
ALTITUDE CHANGES

- Takeoff to 2 ft
- Hover for 5 seconds
- Change altitude to 5 ft
- Hover for 5 seconds
- Fly forward 25 ft at 10 mph
- Yaw right 90° at 30°/sec
- Fly forward 25 ft at 10 mph
- Land
TELLO SNAKE MISSION

**Takeoff**
- fly forward 20 in
- fly right 20 in
- fly forward 20 in
- fly left 20 in
- fly forward 20 in
- fly forward 20 in
- fly left 20 in
- yaw right 180 degrees
- fly forward 80 in

**Land**
A SIMPLE TAKE OFF AND "LAND IN YOUR HAND" MISSION
A SIMPLE TAKE OFF AND "LAND IN YOUR HAND" MISSION
LAUNCHING THE MISSION

1. Power on Tello and place on a flat surface in an open area indoors.
2. Double tap your home button and go to Settings > Wifi
3. Tap on the Tello, which will create a hotspot that will look similar to: Tello-XXXXXX.
4. Double tap your home button and return to DroneBlocks
5. Click "Connect To Tello"
6. Now that you are ready to execute your mission, click the hamburger icon (the blue icon with three lines.)
7. Click "Launch Mission"