

# ADVENTURE DOG PRODUCTIONS

DRONE CLUB COURSE PLAN













#### Introduction

This course was devised by Ed Paterson, Owner of Adventure Dog Productions. He has operated drones in various industries for six years, been approved by the Civil Aviation Authority to operate UAV's commercially, and holds a BNUC qualifiaction and a PfCO (Permission for Commercial Operations).

His career began as a classically trained pianist, his musicianship naturally progressed when he studied a BTEC in Popular Music, BTEC in Acting and went on to study for a Degree in Music & Related Arts at Chichester's UCC. From there he moved into professional theatre, as a stage technician at Chichester Festival Theatre, and later went on to walk the boards at CFT and in theatres all over the UK and Europe.

As well as musically directing youth theatre productions, teaching piano, guitar and performing in bands, he built up his knowledge in all aspects of film production and launched his company.

He is very proud to be able to share his knowledge of the drone industry to the younger generation and is very passionate about the potential of technological developments in the aviation industry, and therefore has designed this entry level course.



#### **Drones in Education**

Now that drones (UAV's, Unmanned Aerial Vehicles or RPAS's Remotely Piloted Aircraft Systems) are easily accessible to almost anyone, it is important to be able to educate on how to operate them safely in designated unmanned airspace.

The students of today are the pilots of tomorrow and we have designed this short course / club to introduce drones to students in the correct environment, in a way that is engaging, educational and fun.

We offer the opportunity for students to get up close to a variety of consumer, professional and enterprise UAV platforms, and on occasions to pilot them and explore the different applications that they are currently used for.

This is a fantastic opportunity to see how a professional flight operation functions and also to consider and discuss the uses of drones and how they can be integrated into modern day life. An introduction to cutting edge technology in a new age of aviation, within one of the most rapidly growing industries in the world today.



## Week 1 - Introduction to Drones

Watch: Drones In Flight - Compilation <a href="https://vimeo.com/288145632">https://vimeo.com/288145632</a>

## Theory

- What is a drone?
- What are drones used for?
- What is airspace?
- Designated airspace.
- · How to operate safely in airspace.
- The Drone Code for hobbiest UAV pilots.

#### Practical

 Take the controls: see drone capabilities as we pilot a DJI Phantom 4, a professional entry level platform, with the opportunity to take control of a drone in flight and operate simple manouvers.



## Week 2 - Team Communications

## Theory

- Roles within a flight team.
- Procedures and communication.
- Takeoff and landing area.
- Pre-flight checks.

## **Practical - Indoor activity**

- Flight demonstration.
- Operate various flight modes piloting a DJI Ryze Tello.
- Fly independently but assisted by your team.
- Develop spacial awareness and hand-eye coordination in a controlled environment.



## Week 3 - Filming on the Ground

## Theory

- · Roles within a ground production crew.
- Operating handheld cameras on the ground.
- Why and how we use a clapper board.
- The importance of storyboarding.
- · Filming a documentary or promotional film.
- Coordinating ground shots with drone shots.

- Split into two teams: Drone Team and Ground Filming Team. Decide who takes which role, e.g. Pilot, Observer, Spotter, Director, Camera Operator, Shot Coordinator, etc.
- · Shoot planned shots as accurately as possible.



## Week 4 - Flight Maps and Orientation

## Theory

- Locate areas on a flight map using given coordinates and identify hazards and no flight zones, such as military areas, airports and aerodromes.
- · Learn about air traffic control and flight lanes.
- Planning and scheduling a flight path.

## **Practical - Indoor activity**

- Operate various flight modes piloting a DJI Ryze Tello.
- Fly independently but assisted by your team.
- Develop spacial awareness and hand-eye coordination in a controlled environment.
- Regaining orientation whilst operating in airspace.



## Week 5 - Photography

## Theory

- Discuss applications and uses for drones and different industries that may require aerial photography.
- Using different settings for photography.
- Framing photos and use of natural light.

- Decide what your photographic subject is or could be.
- Using Selfie Mode: take some group photos whilst operating a drone.
- Take a photo of an object could be a tree or a building.
- Capture various shots from different elevations and angles.



## Week 6 - Videography

## Theory

- What kind of shots can be achieved with a drone, e.g. pull away, centre rise, panoramic, follow, reveal, decent, latteral etc.
- How best to achieve these shots from a piloting perspective.
- Using different preset filters within the DJI Go app.

- · Shooting video whilst operating a drone.
- Each student will attempt to capture a different shot ready for analysis on a PC.
- Assess the success of the test flights and identify areas of achievment and elements for improvement.



## Week 7 - Aerial Formation

Watch: OK Go - I Won't Let You Down - Official Video <a href="https://www.youtube.com/watch?v=u1ZB\_rGFyeU">https://www.youtube.com/watch?v=u1ZB\_rGFyeU</a>

# Theory

- Discuss what type of ground formation we would like to photgraph or film, e.g. spelling out a word, creating a shape, create a formation using humans or props to aid us in our message.
- How to mark out measurements for the formation.
- Where to position the drone for maximum effect.

- Mark out a floor plan for staging positions.
- Rehearse the movement of getting into position.
- Test flight rehearsal with performers.
- Shoot an aerial formation.



## Week 8 - 2D & 3D Mapping & Modelling

## Theory

- What is 2D mapping?
- What is 3D modelling?
- How do we create maps and models with drones?
- What industries would use maps and models?
- What is a 2D orthomosaic map?
- What can we do with a 3D model?
- What is a 3D point cloud?

## Practical

• Design an automated flight plan ready to commence in Week 9 using Drone Deploy or Pix4D.



## Week 9 - Automated Flight

## Theory

- Pre-flight checks.
- Battery log.
- Flight times.
- · Satellite GPS check.
- Takeoff proceedure.

- Commence and complete flight mission; the UAV will automatically launch, locate starting point and follow a waypoint grid mission, then return to home and automonously land at the same takeoff location.
- Flight operations signs will be issued, landing site cordoned off and will be monitored at all times.



## Week 10 - Flight Test

## Theory

- Review our 2D orthomasaic map, elevation map, plant health report, 3D point cloud and 3D model.
- Discuss filming oblique areas of structures.
- Discuss the benefits of GCP's (ground control points) global and relative.
- Written test based on elements of the whole course.

- Practical flight test including taking off, flying a figure of eight sequence, capturing a photo and landing.
- Presentation ADP Hobbiest Pilot Certificate Level 1.



#### **ADVENTURE DOG PRODUCTIONS**

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