



## **Course Outline: Vale UAS Operator Certification**

### **Overview:**

This is a four-day course that covers the techniques and best practices required to safely and successfully utilize drones for inspection purposes. Every aspect of operations is covered, from equipment, preflight planning and legal compliance to operational procedures, flight training, and data collection. We will work through the entire mission cycle, starting with legal compliance, planning, and then pre and post flight operations. The Vale UAS Operator Certification is an industry standard and “must-have” for anyone in the industry who is planning to use a drone for photography and inspection work on site.

### **Syllabus:**

#### **Day 1:**

***Welcome/Introductions***

***Scenario Brief***

***Introduction to FAA***

***Introduction to Drone Complier***

***Federal Airspace Overview***

***Part 107***

***Drone Complier Setup***

#### **Day 2:**

***Human Factors***

***Meteorology***

***Battery Safety***

***Personal Protective Equipment***

***Risk Analysis and Management***

***Multi-Rotor Aero Overview***

***Navigation***

***Operational Planning***

### **Day 3:**

***Operational Weather***  
***Pre and Post Flight Operations***  
***DJI Phantom Practical Overview***  
***Mission Planning Practical Overview***  
***First Flight (at field site)***

### **Day 4:**

***Inspection Operations Practical (at field site)***  
***Aerial Maneuvers Practical (at field site)***

## **Course Info:**

### **Audience:**

Anyone who will be planning operations for, or operating a drone in a professional capacity. This course teaches how to properly and legally plan a drone use mission, and then execute the mission by safely collecting the required data.

### **Who will benefit:**

All persons who will be flying UAS for aerial inspections of roofs or buildings, including adjusters, engineers, field underwriters, and public adjustors.

### **CEU:**

Currently being applied for with state DOI's.

**Class Begins at 9:00 am.**

## **Day 1: Organization Setup and Intro to Aviation**

- I. Welcome and Introductions. 50 Minutes
  - A. Introduction to course.
    - a. Safety Minute
    - b. Instructor Background and Experience
    - c. Attendee Background and Experience
    - d. Instructor Course Overview of what will be covered and discussed
    - e. Attendee Expectations of Course
  - B. Scenario Brief
    - a. Situational overview
    - b. Explanation of scenario integration into coursework

**Break**

**10 Minutes**

- II. Introduction to FAA 80 Minutes
  - A. FAA authority
    - a. Legal Definitions
    - b. Congressional Authorizations
  - B. Aviation Terminology and Industry Concepts
    - a. Organizational Roles
    - b.
  - C. FAA Legislation Applying Directly to SUAS
    - a. General Operational Guidelines and Restrictions
    - b. Part 107 introduction
    - c. Other Authorities
  - D. State and Municipal Considerations

**Break 10 Minutes**

- III. Drone Complier Introduction 50 Minutes
  - A. Organization/legal compliance
  - B. equipment and personnel management
  - C. mission planning
  - D. App usage (field operations)

**Break – Lunch 90 Minutes**

- IV. Federal Airspace Overview 50 Minutes
  - A. Classes of Airspace
  - B. Operations within airspace by type
  - C. Scenario Application

**Break 10 Minutes**

- V. Part 107 30 Minutes
  - A. How to get certified (FAA testing)
  - B. Operational Guidelines/restrictions under Part 107

- VI. Drone Complier Setup 80 Minutes
  - A. Account Access
  - B. Authority Setup
  - C. Equipment and Personnel Setup
  - D. Scenario Introduction (project and task setup)

**Day 1 Classes Complete / Simulator available**

## **Day 2: Safety Considerations and Mission Planning**

- I. Human Factors 50 Minutes
  - A. Scenario Example (Interactive Q&A)
  - B. Assessment Tools
    - a. IMSAFE
    - b. PAVE
  - C. “Swiss Cheese” Model

**Break** **10 Minutes**

II. Meteorology **30 Minutes**

- A. Atmosphere Overview
- B. Wind Overview
  - a. Katabatic/Anabatic
  - b. Orographic Uplift
- C. Clouds
- D. Thunderstorms
- E. Fog
- F. Scenario Interaction

III. Battery Safety **30 Minutes**

- A. LiPo Overview
- B. Charging Procedures
- C. Storage Procedures
- D. Operational Safety
- E. DJI Video

IV. Personal Protective Equipment **10 Minutes**

**Break** **10 Minutes**

V. Risk Analysis and Management **30 Minutes**

- A. Overview of risks
- B. Risk assessment matrix
- C. DJI Instructional Video
- D. Scenario Interaction

**Break – Lunch** **90 Minutes**

VI. Multi Rotor Aero Overview **50 Minutes**

- A. Quadcopter Overview
- B. Movement
  - a. Pitch
  - b. Roll
  - c. Yaw
- C. Forces in Flight
  - a. Thrust/Weight
  - b. Torque Effect
  - c. Drag
- D. Ground Effect
- E. Turning in Flight
- F. DJI Pilot Error Video

**Break** **10 Minutes**

VII. Navigation **30 Minutes**

- A. Latitude and Longitude
- B. Magnetic Direction
- C. Aviation Navigational Units
- D. Aviation Date/Time

E. Scenario Interaction

VIII. Operational Planning	90 Minutes
A. Site Selection/Overview	
B. Equipment Selection	
C. Mission Planning in Drone Complier	
D. Scenario Interaction	

**Day 2 Classes Complete / Simulator available**

### **Day 3: Operations**

I. Operational Weather	30 Minutes
A. Temperature	
B. Visibility/VFR	
C. Scenario Interaction	

III. Pre/Post Flight Ops	90 Minutes
A. Checklists	
B. JSA	
C. Launch process	
D. Scenario Interaction	
E. Recovery Process	
F. Data Management	
G. Scenario Interaction	

IV. DJI Phantom Practical Overview	50 Minutes
A. System/hardware overview	
B. Controller and app	
C. Firmware/battery updating	

V. Mission Planning Practical Exercise	30 Minutes
A. Student creates and submits mission for approval	
B. Instructor Verification	

**Break – Lunch/travel to flight site** **90 Minutes**

VI. First Flight	240 Minutes
A. Unboxing/airframe prep	
B. Initial flight (each student observed)	
C. Post-flight operations	

**Day 3 Classes Complete**

### **Day 4: Flight Practicals**

*\*\*Please note that flight testing day occurs in the field and will begin on site. Under ideal circumstances this will be the fourth day of the course, but the modules may have to be rearranged due to weather considerations. A total of 12 hours of field training covering the basics of flight, inspection operational procedures, and pilot maneuvers will occur per the curriculum schedule, even if the order of the modules is changed.*

- I. Inspection Flights Overview 240 Minutes
  - A. Site analysis
  - B. Aircraft Launch procedures
  - C. Inspection Flight Operations (each student observed)

**Lunch Break 60 Minutes**

- II. Pilot Proficiency Test (individual/per student) 240 hours
  - A. Pre-flight procedures
  - B. Practice Flights
  - C. Aerial maneuvers
  - D. Post flight procedure

**Ends at 5:50 pm**