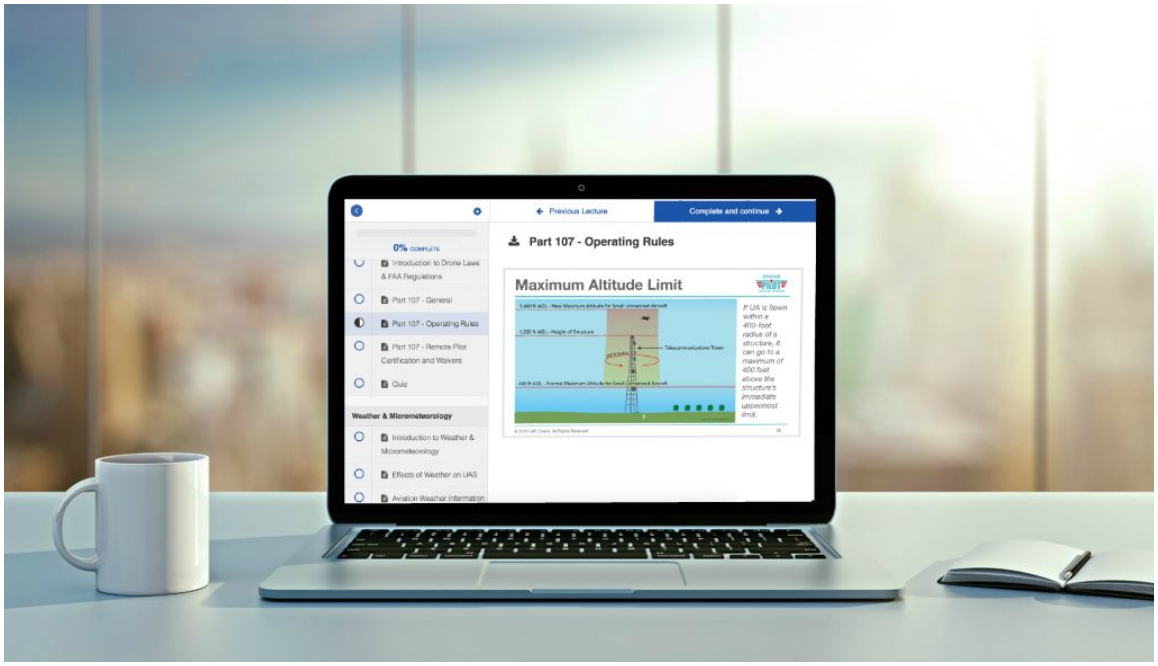
DRONE PILOT Ground School

Part 107 Aeronautical Knowledge Test: Study Guide Checklist



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1. Fast Facts

- The Aeronautical Knowledge Test is available effective August 29, 2016.
- You must take the test in person at your local FAA-certified testing center.
- It's an objective, multiple-choice test.
- There are 60 questions, with three single responses (A, B, and C) per question.
- Each test question will be independent of other questions; therefore, a correct response to one will not depend upon, or influence, the correct response to another.
- Some questions may require you to reference airspace maps or charts. These reference materials will be provided to you by your test proctor in the form of a testing supplement.
- The minimum passing score is 70% (meaning, you'll need to get at least 42 questions right).
- You're allowed two hours to complete the test.

2. What's on the Test?

The FAA's Unmanned Aircraft Systems Airman Certification Standards consists of **127 specific knowledge concepts** in which you may be required to demonstrate proficiency during your Aeronautical Knowledge Test.

Our Drone Pilot Ground School curriculum preps you on each of these 127 knowledge concepts.

See below for the 127 point checklist. You will also see where each concept is covered in our Drone Pilot Ground School.

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This is the **breakdown of the questions** by theme:

UAS Topics	Percentage of Items on Test
I. Regulations	15 – 25%
II. Airspace & Requirements	15 - 25%
III. Weather	11 – 16%
IV. Loading and Performance	7 – 11%
V. Operations	35 – 45%
Total Number of Questions	**60**

The FAA released 40 practice questions in a sample test. Here are two of those questions. Note that both questions require you to refer to the testing supplement.

(Refer to FAA-CT-8080-2G, Figure 26.) What does the line of latitude at area 4 measure?

A. The degrees of latitude east and west of the Prime Meridian.
B. The degrees of latitude north and south from the equator.
C. The degrees of latitude east and west of the line that passes through Greenwich, England.

PLT064 / UA.V.B.K6a Sources for airport data: Aeronautical charts.

(Refer to FAA-CT-8080-2G, Figure 23, area 3.) What is the floor of the Savannah Class C airspace at the shelf area (outer circle)?

A. 1,300 feet AGL.
B. 1,300 feet MSL.
C. 1,700 feet MSL.

PLT040 / UA.II.A.K1b General airspace: Class C controlled airspace.

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3. Study Checklist

These are the 127 knowledge concepts in the FAA's UAS Airman Certification Standards. Each section includes the Drone Pilot Ground School module and lecture that teaches these concepts.

We recommend you print out this checklist and check the boxes below as you master each knowledge concept.

I. Regulations (15-25% of Items on Test)

General

- ❏ The applicability of 14 CFR part 107 to small unmanned aircraft operations.
- ❏ Definitions used in 14 CFR part 107.
- ❏ The ramification of falsification, reproduction, or alteration of a certificate, rating, authorization, record, or report.
- ❏ Accident Reporting.
- ❏ Inspection, testing, and demonstration of compliance.

Drone Pilot Ground School teaches the above knowledge concepts in this lecture:
Drone Laws & FAA Regulations: Part 107 – General

Operating Rules

- ❏ Registration requirements for sUAS.
- ❏ The requirement for the sUAS to be in a condition for safe operation.
- ❏ Medical condition(s) that would interfere with safe operation of an sUAS.
- ❏ Responsibility and authority of the remote pilot in command.
    - ❏ Allowing a person other than the remote PIC to manipulate the flight controls.
- ❏ Regulatory deviation and reporting requirements of in-flight emergencies.
- ❏ Hazardous operations.
    - ❏ Careless or reckless.
    - ❏ Dropping an object.

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- ❏ Operating from a moving aircraft or moving land- or water-borne vehicle.
- ❏ Alcohol or drugs and the provisions on prohibition of use.
- ❏ Daylight operation.
- ❏ Visual line of sight (VLOS) aircraft operations.
- ❏ The requirements when a visual observer is used.
- ❏ The prohibition of operating multiple sUAS.
- ❏ The prohibition of carrying hazardous material.
- ❏ Staying safely away from other aircraft and right-of-way rules.
    - ❏ See and avoid other aircraft and other potential hazard considerations of the remote pilot in command
- ❏ Operations over human beings.
- ❏ Prior authorization required for operation in certain airspace.
- ❏ Operation in the vicinity of airports.
- ❏ Operation in prohibited or restricted areas.
- ❏ Flight restrictions in the proximity of certain areas designated by notice to airmen (NOTAM).
- ❏ Preflight familiarization, inspection, and actions for aircraft operations.
- ❏ Operating limitations for small unmanned aircraft.
    - ❏ Maximum groundspeed.
    - ❏ Altitude limitations.
    - ❏ Minimum visibility.
    - ❏ Cloud clearance requirements.
- ❏ Requirements for a Remote Pilot Certificate with a Small UAS Rating.

Drone Pilot Ground School teaches the above knowledge concepts in this lecture:
Drone Laws & FAA Regulations: Part 107 – Operating Rules

Remote Pilot Certification with an sUAS rating

- ❏ Offenses involving alcohol or drugs.
- ❏ The consequences of refusing to submit to a drug or alcohol test or to furnish test results.
- ❏ The eligibility requirements for a Remote Pilot Certificate with a Small UAS Rating.
- ❏ Aeronautical knowledge recency.

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Waivers

- ❏ The waiver policy and requirements.

Drone Pilot Ground School teaches the above knowledge concepts in this lecture:
Drone Laws & FAA Regulations: Part 107 – Remote Pilot Certificate & Waivers
(Alcohol and drugs are covered in Part 107 – Operating Rules)

II. Airspace Classification and Operating Requirements (15-25% of Items on Test)

Airspace Classification

- ❏ General airspace
  - ❏ Class B controlled airspace
  - ❏ Class C controlled airspace
  - ❏ Class D controlled airspace
  - ❏ Class E controlled airspace
  - ❏ Class G uncontrolled airspace
- ❏ Special-use airspace, such as prohibited, restricted, warning areas, military operation areas, alert areas, and controlled firing areas.
- ❏ Other airspace areas, such as Airport Advisory Services, Military Training Routes (MTRs), Temporary Flight Restrictions (TFRs), Parachute Jump Operations, Terminal Radar Service Areas (TRSAs), National Security Areas (NSA) and Visual Flight Rules (VFR) routes.
- ❏ Air Traffic Control (ATC) and the National Airspace System (NAS).

Drone Pilot Ground School teaches the above knowledge concepts in this lecture:
National Airspace System (NAS): Know Your FAA Airspace Classes

Airspace Operational Requirements

- ❏ Basic weather minimums.
- ❏ ATC authorizations and related operating limitations.
- ❏ Operations near airports.

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- Potential flight hazards.
    - Common aircraft accident causal factors
    - Avoid flight beneath unmanned balloons
    - Emergency airborne inspection of other aircraft
    - Precipitation static
    - Light amplification by stimulated emission of radiation (laser) operations and reporting illumination of aircraft
    - Avoid flight in the vicinity of thermal plumes, such as smoke stacks and cooling towers
    - Flying in the wire environment
- The NOTAM system including how to obtain an established NOTAM through Flight Service.

Drone Pilot Ground School teaches the above knowledge concepts in this lecture:
National Airspace System (NAS): Airspace Operations

III. Weather (11-16% of Items on Test)

Sources of Weather

- Internet weather briefing and sources of weather available for flight planning purposes.
- Aviation routine weather reports (METAR).
- Terminal aerodrome forecasts (TAF).
- Weather charts.
- Automated surface observing systems (ASOS) and automated weather observing systems (AWOS).

Drone Pilot Ground School teaches the above knowledge concepts in this lecture:
Weather & Micrometeorology: Aviation Weather Information Sources

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Effects of Weather on Performance

- Weather factors and their effects on performance:
    - Density altitude

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- ❏ Wind and currents
- ❏ Atmospheric stability, pressure, and temperature
- ❏ Air masses and fronts
- ❏ Thunderstorms and microbursts
- ❏ Tornadoes
- ❏ Icing
- ❏ Hail
- ❏ Fog
- ❏ Ceiling and visibility
- ❏ Lightning

Drone Pilot Ground School teaches the above knowledge concepts in this lecture:
Weather & Micrometeorology: Effects of Weather on Small UAS

IV. Loading and Performance (7-11% of Items on Test)

Loading and Performance

- ❏ General loading and performance:
  - ❏ Effects of loading changes
  - ❏ Balance, stability, and center of gravity
- ❏ The importance and use of performance data to predict the effect on the performance of an sUAS.

Drone Pilot Ground School teaches the above knowledge concepts in this lecture:
Drone Flight Operations: Small UAS Loading & Performance

V. Operations (35-45% of Items on Test)

Radio Communications Procedures

- ❏ Airport operations with and without an operating control tower.

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- The description and use of a Common Traffic Advisory Frequency (CTAF) to monitor manned aircraft communications.
- Recommended traffic advisory procedures used by manned aircraft pilots, such as self- announcing of position and intentions.
- Aeronautical Advisory Communications Station (UNICOM) and associated communication procedures used by manned aircraft pilots.
- Automatic Terminal Information Service (ATIS).
- Aircraft call signs and registration numbers.
- The phonetic alphabet.
- Phraseology: altitudes, directions, speed, and time.

Drone Pilot Ground School teaches the above knowledge concepts in this lecture:
Drone Flight Operations: Radio Communication Procedures

Airport Operations

- The types of airports, such as towered, uncontrolled towered, heliport, and seaplane bases.
- ATC towers, such as ensuring the remote pilot can monitor and interpret ATC communications to improve situational awareness.
- Runway markings and signage.
- Traffic patterns used by manned aircraft pilots.
- Security Identification Display Areas (SIDA).
- Sources for airport data:
    - Aeronautical charts
    - Chart Supplements
- Avoiding bird and wildlife hazards and reporting collisions between aircraft and wildlife.

Drone Pilot Ground School teaches the above knowledge concepts in this lecture:
Drone Flight Operations: Airport Operations

Emergency Procedures

- Emergency planning and communication.
- The characteristics and potential hazards of lithium batteries:
    - Safe transportation, such as proper inspection and handling

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    - Safe charging
    - Safe usage
    - Risks of fires involving lithium batteries
- Loss of aircraft control link and fly-aways.
- Loss of Global Positioning System (GPS) signal during flight and potential consequences.
- Frequency spectrums and associated limitations.

Drone Pilot Ground School teaches the above knowledge concepts in this lecture:
Drone Flight Operations: Emergency Operations

Aeronautical Decision-Making

- Aeronautical Decision-Making (ADM):
    - Effective team communication
    - Task management
- Crew Resource Management (CRM).
- Situational awareness.
- Hazardous attitudes.
- Hazard identification and risk assessment.

Drone Pilot Ground School teaches the above knowledge concepts in this lecture:
Drone Flight Operations: Aeronautical Decision-Making

Physiology

- Physiological considerations and their effects on safety, such as dehydration and heatstroke.
- Drug and alcohol use.
- Prescription and over-the-counter medication.
- Hyperventilation.
- Stress and fatigue.
- Factors affecting vision.
- Fitness for flight.

Drone Pilot Ground School teaches the above knowledge concepts in this lecture:
Drone Flight Operations: Physiology

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Maintenance and Inspection Procedures

- ❏ Basic maintenance.
- ❏ Preflight inspection.
- ❏ Techniques to mitigate mechanical failures of all elements used in sUAS operations, such as the battery and/or any device(s) used to operate the sUAS.
- ❏ Appropriate record keeping.
- ❏ Persons that may perform maintenance on an sUAS.

Drone Pilot Ground School teaches the above knowledge concepts in this lecture:
Drone Flight Operations: Small UAS Maintenance & Inspection

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