

# CHAPTER ONE

## What Is FAA Part 107?



The Federal Aviation Administration's (FAA) part 107 rulemaking processes were created to address the need for a regulatory framework governing the operation of small unmanned aircraft systems (UAS). The rulemaking process was initiated in response to the growing popularity of UAS and the potential impact they could have on aviation safety. The FAA released a Notice of Proposed Rulemaking (NPRM), which proposed regulations that would allow for the safe integration of UAS into the national airspace system. After considering comments from the public and other stakeholders, the FAA finalized its rules in August 2016.

The Federal Aviation Administration (FAA) is responsible for regulating airspace in the United States. Part 107 of the FAA regulations are specifically devoted to unmanned aircraft systems (UAS), also known as drones. Part 107 establishes rules for operating drones in U.S. airspace, including requirements for registration, marking, and lighting of drones;

limits on flight altitude and speed; and restrictions on where drones can be flown.

Operators of a drone must obtain a remote pilot certificate from the FAA in order to fly their Drone legally in U.S. airspace. To obtain a remote pilot certificate, an operator must pass an initial aeronautical knowledge test at an FAA-approved testing center or hold a current private pilot certificate or higher-level aviation certification issued by the FAA.

Part 107 also requires that operators give way to manned aircraft at all times and stay clear of airports and helipads. In addition, operators must not fly their drones over people not directly involved with the operation unless those people are under a covered structure or inside a vehicle.

The part 107 rule establishes a set of operating requirements for small UAS that weighs less than 55 pounds. Under this rule, operators must obtain a Remote Pilot Certificate from the FAA before they can operate a UAS commercially or for business purposes. Operators must also adhere to certain flight restrictions, such as flying only during daylight hours and maintaining visual line-of-sight contact with their aircraft at all times. In addition, operators must not fly their aircraft over people who are not directly involved in its operation and must avoid flying near airports or other controlled airspaces unless they have obtained prior authorization from air traffic control.

The 60 multiple-choice questions on the Part 107 knowledge test cover a wide range of aviation and aeronautics-related topics. To pass the test, a candidate must respond correctly to at least 42 out of 60 questions, or at least 70% of the total. Since PSI administers the exam on behalf of the FAA, candidates may take the knowledge test at any of the more than 700 FAA-accredited testing facilities located throughout the US and in a few foreign

countries. If you meet all the prerequisites, you will need to schedule an appointment with PSI in order to take the test.

The most work that a drone pilot must put in to obtain a drone license is probably studying for the Part 107 knowledge test. Even simple tasks like reading sectional maps and deciphering common radio lingo can fly difficult for someone without any prior aviation expertise. Because of this, we firmly advise allocating at least two weeks to thoughtfully prepare for the knowledge test.

No matter how you prepare, you should arrive at your appointment on time, with a legitimate photo ID, and ideally, with a simple calculator. You cannot bring your phone into the exam room, so leave it outside. The knowledge test will be handed to you with two hours to complete it.

You will be informed of your test results within 48 to 72 hours. If you succeeded, kudos to you! Before you are officially awarded the drone license, you will still need to go through a TSA background check (which can take a few weeks). You must have your drone license with you at all times if you are a Part 107 licensed drone pilot, among the roughly a dozen additional requirements.

The FAA will permit you to retake the knowledge test after 14 days if you fail it. You should be aware that the 60 questions on your knowledge exam were chosen at random from a much bigger pool of questions. This implies that even if you take the test more than once, it's highly improbable that you'll see the same set of questions.

The implementation of part 107 has been successful in addressing many of the concerns raised about integrating UAS into manned airspace. Establishing clear operating requirements and restrictions has helped to ensure that small

UAS are operated safely and responsibly. This has resulted in fewer incidents involving drones and increased confidence among members of the aviation community about sharing the skies with these new types of aircraft.

## Benefits of Having an FAA Part 107 Certificate

The Federal Aviation Administration (FAA) Part 107 certificate is required for anyone who wants to operate a drone commercially in the United States. The certificate allows pilots to fly drones for business purposes, such as photography, videography, aerial mapping, and surveying. There are many benefits of having an FAA Part 107 certificate, including the following:

An FAA part 107 certificate is required for anyone who wants to operate a drone commercially in the United States. There are many benefits to having this certification, including the ability to fly drones without having to obtain a pilot's license and being able to fly drones in controlled airspace.

- The first benefit of having an FAA part 107 certificate is that it allows you to operate a drone without needing a pilot's license. This means that you do not need to go through the process of becoming a licensed pilot, which can be time-consuming and expensive. Instead, you can simply take the test and become certified quickly and easily.
- Another benefit of holding an FAA part 107 certificate is that it gives you access to controlled airspace. This type of airspace is typically off-limits for recreational drone pilots, but with this certification, you will be able to fly your Drone in these areas. This can be extremely beneficial if you want to use your Drone for commercial purposes such as photography or videography.
- **Increased Safety:** Pilots who have an FAA Part 107 certificate have undergone training on how to safely operate a drone. This training includes learning about airspace regulations, weather conditions that are safe for flying, and emergency procedures.

Having this certification shows that a pilot is knowledgeable about safety protocols and is less likely to cause an accident.

- **Legality:** In order to fly a drone commercially in the United States, pilots must have an FAA Part 107 certificate. This certification demonstrates that pilots are following the law and ensures that they are operating their drones in a safe manner.
- **Professionalism:** Many businesses prefer to work with commercial drone operators who have an FAA Part 107 certificate because it shows that they are serious about their job and take safety seriously. Pilots who do not have this certification may be viewed as amateurish or careless, which could lead to lost business opportunities.

Overall, having an FAA part 107 Certificate offers many advantages for commercial drone operators. It increases safety, ensures legality, and conveys professionalism – all important factors when running a successful business.

## **How to Choose The Drone**

When it comes to choosing the right Drone, there are a few things you need to take into account. First and foremost, you need to decide what kind of Drone you want. There are two main types of drones: **ready-to-fly (RTF)** and **build-it-yourself (BIY)**.

RTF drones come with everything you need to get started flying right out of the box, while BIY drones require some assembly.

- **Size**

Next, you'll need to consider what size drone is right for you. Drones come in a variety of sizes, from small Nano drones that can fit in the palm of your hand to large professional quadcopters that weigh several pounds. The size of the Drone will determine how long it can stay in the air and how much payload it can carry.

Finally, think about what features are important to you and look for a drone that has those features built-in or available as an add-on. Some common features include GPS navigation, first-person view (FPV), obstacle avoidance, follow-me mode, return home function, etc. With so many different options on the market today.





# CHAPTER TWO

## Aircraft Requirements



A drone is an unmanned aircraft. There are two main types of drones: those that are operated by remote control and those that are autonomous. Drones can be used for various purposes, including surveillance, reconnaissance, and target practice.

The Federal Aviation Administration (FAA) is responsible for the safety of civil aviation. The FAA's rules for drones are designed to minimize risks to other aircraft and people, and property on the ground.

- **All drone pilots must register their drones with the FAA.**

Drones that weigh more than 0.55 pounds (250 grams) but less than 55 pounds (25 kilograms) must be registered with the FAA before they can be

flown outdoors. You will need to provide your name, address, and email address when you register. You will also need to pay a small registration fee (\$5 for three years). Once you have registered your Drone, you will receive a certificate of registration that you must keep with you when flying your Drone outdoors.

□ **You must fly your Drone within a visual line of sight at all times.**

This means that you must be able to see your Drone while it is in flight without using binoculars or other vision-enhancing devices. You should also avoid flying near airports or helipads, as well as over groups of people. If possible, fly in areas where there are not many buildings or trees. Keep in mind that even if an area looks empty, there may still be people nearby who could be injured if your Drone crashes. In general, it is best to avoid flying over populated areas altogether. When flying near other aircraft, always give them the right of way and maintain a safe distance from them.

Drones come in a variety of shapes and sizes, but all have certain basic components. These include wings or rotors (for lift), motors (for propulsion), batteries (for power), a flight controller (to stabilize the craft), sensors (to gather information about the environment), and GPS receivers (to determine location). Some drones also have cameras to allow them to capture images or video footage.

When choosing a drone, it is important to consider its intended purpose. For example, racing drones are designed for speed and agility, while camera drones are equipped with high-quality cameras for photography and videography. It is also important to select a drone that is appropriate for your skill level; many consumer-grade drones come with features such as auto-takeoff/landing that make them easier to operate than more complex models.

## **Pilot's Requirements**

The Federal Aviation Administration (FAA) is responsible for regulating the use of drones, or unmanned aircraft systems (UAS), in the United States. The FAA requires that all drone operators must register their drones with the agency and obtain a pilot's license if they want to fly their drones for commercial purposes.

- ☐ To obtain a pilot's license, an operator must be at least 16 years old and pass an aeronautical knowledge test at an FAA-approved testing center. The operator must also have a current and valid U.S. driver's license or be able to show proof of equivalent certification from another country.
- ☐ After obtaining a pilot's license, commercial drone operators are required to follow certain rules and regulations set forth by the FAA in order to ensure safety while flying their drones. These rules include maintaining visual line-of-sight contact with the Drone at all times, flying only during daylight hours, staying below 400 feet above ground level, and not flying near airports or other manned aircraft operations.

Next, you must obtain a remote pilot certificate from the FAA. To do this, you will need to complete an online application and pass a knowledge test at an authorized testing center.

- ☐ Finally, you must register your Drone with the FAA before flying it. You can do this online or by mail. Once your Drone is registered, you will receive a Certificate of Registration which you must keep with your Drone at all times while operating it.

## **What Are The Required Documentation?**

As the use of drones continues to grow, so does the need for clear and concise regulations surrounding their use. The Federal Aviation Administration (FAA) is responsible for regulating the airspace in the United States and, as such, has put forth a set of requirements that must be met in order to legally operate a drone.

First and foremost, anyone operating a drone must do so in a safe manner. This means flying only during daylight hours and keeping the Drone within visual line of sight at all times. Additionally, drones must not be flown near other aircraft or people and should avoid populated areas altogether.

In terms of documentation, anyone wishing to fly a drone commercially (for any sort of business purpose) must obtain an FAA Part 107 certificate. This can be done by passing an aeronautical knowledge test at an FAA-approved testing center. Those who wish to fly recreationally may do so without obtaining this certificate but are still subject to all other safety regulations set forth by the FAA.

## **Remote Pilot Responsibilities**

The Federal Aviation Administration (FAA) is responsible for the safety of civil aviation. Part 107 of the FAA regulations contains the rules for operating small unmanned aircraft systems (UAS). The remote pilot in command (RPIC) is the person who is directly responsible for and has final authority over the operation of a small UAS.

The RPIC must ensure that all flights are conducted in accordance with Part 107 and other applicable laws and regulations. In addition, the RPIC must have a thorough understanding of aeronautical knowledge, including principles of flight, meteorology, airspace classification, navigation charts, and airport operations. The RPIC must also be able to effectively communicate with air traffic control personnel and maintain visual line-of-sight (VLOS) contact with their UAS at all times during flight operations.

Operating a UAS can be complex and challenging; therefore, it is important that pilots understand their responsibilities before they attempt to operate one. Pilots who do not adhere to these rules may be subject to civil or criminal penalties from the FAA.

- ☐ A remote pilot must have a valid pilot certificate and be at least 16 years old.
- ☐ The remote pilot must also pass a TSA security screening if they are operating in controlled airspace. A remote pilot can operate an unmanned aircraft without an observer if they maintain visual line-of-sight (VLOS) contact with the UAS at all times.
- ☐ If the remote pilot cannot maintain VLOS, then they must have someone who can act as an observer to maintain visual contact with the UAS.
- ☐ The observer must be able to communicate with the remote pilot and have a clear view of the intended flight path of the UAS.

## **Uses of Drones**

- **Preservation of both natural and cultural heritage**

When there are people present on the ground, it is nearly impossible to track wildlife numbers. Utilizing drones as a means of solving this problem is one viable option.

They are alternatives that are less expensive and more effective for the preservation of wildlife. Keepers and specialists can get a bird's-eye view of roving groups of animals using drones, which enables them to track the animals more effectively.

In addition, they can be utilized for replanting purposes, such as sweeping the floors of forests that have been damaged by fires. These unmanned aerial vehicles (UAVs) release seeds, fertilizers, and other nutrients that will assist a tree in regenerating after it has been burned.

- **For Agricultural purposes**

The use of drones has also shown to be advantageous to the agricultural sector. They are extremely helpful to farmers and advantageous for them in a number of ways, including the following:

- ☐ Getting the most out of the farm
- ☐ The pursuit of optimal productivity
- ☐ Lessening the impact on one's body

They can use UAVs to assist them in doing field surveys, planting, locating livestock, and calculating crop yields. In a nutshell, agriculture workers may make better use of their time with the assistance of drones.

- **For Delivery purposes**

There are models of drones that are created specifically for the transportation of products like food, packages, and other items. Last-mile delivery drones are another name for these types of aircraft.

They are utilized in the process of making a delivery from stores directly to the front doorstep of customers. Products weighing up to 55 pounds can be carried by a delivery drone all the way to your front door.

They have the potential to transform your life, as well as the operations of retail stores and food distribution networks, more efficient and convenient.

- **For the purpose of Search & Rescue (SAR)**

There are times when emergency personnel are unable to enter a dangerous scenario in order to perform a rescue due to the severity of the disaster. Drones can be useful in situations like this.

For instance, in the event that there is an avalanche, emergency rescue drones will be sent out to search for people who have become buried in the snow. Additionally, there are models that have been utilized to aid in the fight against flames.

- **For Medical Purposes**

It might be challenging to provide medical supplies to persons who live in remote or inaccessible places. In the process of transporting organs for transplant patients, time is of the utmost importance; nevertheless, traffic—both on the ground and in the air—can provide a challenge.

However, this cutting-edge flying technology, in the form of drones, maybe the answer to your problems. In the state of Alaska, off-grid settlements frequently get freight and emergency medical supplies by unmanned aerial vehicles (UAVs) of the most recent generation.

In addition, for the purpose of transporting donated organs to patients in need of transplants! Did you know that a hospital in Maryland created history by



carrying a kidney over the air in less than five minutes using a drone that was expressly developed for the purpose?

This demonstrates how the use of drones can assist save time while also providing a way of delivery that is safer and more secure for organs and medical supplies.

- **The outer space**

Drones designed specifically for use in space flight have been the subject of experimentation by both NASA and the United States Air Force. The X-37B unmanned aerial vehicle (UAV) has a size and appearance that is comparable to that of a tiny space shuttle.

The United States Space Force has had this particular unmanned and reusable spacecraft in orbit around the Earth for the past two years. It was the unmanned aircraft that set the record for the longest flight ever completed.

The X-37B UAV, in its most basic form, conducts experiments for the purpose of the study on Earth. It would appear that unmanned aerial vehicles, or drones, hold promise for use in future innovations and space exploration.

# CHAPTER THREE

## Rules and Regulations



The Federal Aviation Administration (FAA) is responsible for regulating drones, also known as unmanned aircraft systems (UAS). The agency has strict rules and regulations that must be followed when flying a drone. Here are the key things you need to know:

- You must register your Drone with the FAA. You will need to provide your name, address, and email address. You will also be required to pay a registration fee of \$5.00. Once you have registered your Drone, you will be given a unique identification number that must be displayed on the aircraft at all times.

- ☐ You must follow all safety guidelines when flying your Drone. This includes maintaining a visual line-of-sight with the aircraft at all times, avoiding populated areas and airports, and not flying near other aircraft or people. Additionally, drones should only be flown during daylight hours and in good weather conditions.
- ☐ It is important to know that there are restrictions on where drones can be flown. For example, drones are not allowed in national parks. There are also many airspace restrictions around military bases, power plants, prisons, and other sensitive areas. Be sure to check for any restricted areas before flying your Drone.
- ☐ When flying for a commercial airline, you should never let go of your Part 107 certificate. You may be asked to produce your Part 107 certification by a representative from the FAA, the TSA, or law enforcement at any time. This authority rests with each individual agency.
- ☐ Always stay clear of manned aircraft and give them the right of way.
- ☐ Regardless of how much weight a drone has, it must all be registered with the FAA in order to fly under the Part 107 standards. Following official FAA guidelines on marking, each individual Drone needs to be registered, and that registration number needs to be visible on the Drone. Drones must also be marked with their individual registration numbers.
- ☐ If a drone is going to be utilized for commercial purposes, the overall weight of the Drone, including any accessories, payload, or freight, shall not exceed 55 pounds.

- ☐ A pilot of a drone is required to make their aircraft available for inspection or testing whenever the FAA makes the request.
- ☐ Maintain constant visual contact with your Drone at all times. This task must be completed without the use of any devices that improve one's vision. If you are unable to do so, you should ask a visual observer to carry out this role on your behalf.
- ☐ It is imperative that you refrain from flying your Drone over any individuals who are not directly involved in the mission at hand.
- ☐ Flying your Drone over a moving car is strictly prohibited.
- ☐ You should only fly your Drone if you can see at least three miles in any direction from your current location due to the weather.
- ☐ If you are not flying your Drone over a sparsely populated area and your mission does not entail the transportation of property for remuneration, you should not operate your Drone while it is attached to a moving vehicle on land or water.
- ☐ The maximum height at which a drone is permitted to fly is 400 feet above the ground or higher, but this restriction applies when the Drone is flying within 400 feet of a towering structure.
- ☐ You should not fly your Drone in a sloppy or dangerous manner at any time.
- ☐ The maximum ground speed that is permitted for drone flight is 100 miles per hour, which is equivalent to 87 knots.
- ☐ The operation of drones in airspace designated as Class B, C, D, or E is only permitted if the required authorization from air traffic

control has been received. Even without approval from air traffic control, operations can be conducted in Class G airspace.

- Operations with drones are only permitted during daylight hours or during the twilight period (beginning 30 minutes before official dawn and ending 30 minutes after official sunset), provided the Drone in question is fitted with lighting designed to prevent collisions.
- Within ten days following the incident, any mishap involving a drone that results in serious injury, loss of consciousness, or property damage of at least \$5,000 must be reported to the FAA.

Failure to comply with these rules could result in civil or criminal penalties from the FAA.

## **Recreational Vs. Commercial**

- **Recreational**

With the ever-growing popularity of drones, many people are now wondering if they can fly one for recreational purposes. The answer is yes! In fact, flying a drone is relatively easy and can be great fun. Here's everything you need to know about flying a drone for recreational purposes.

First, you will need to purchase a drone that is specifically designed for recreational use. There are many different types and models of drones on the market, so it's important to do your research before making a purchase. Once you have your Drone, familiarize yourself with how it works and read the manual thoroughly.

Next, you will need to find an appropriate location to fly your Drone. It's important to make sure that there are no people or animals in the area that

could be put at risk by your flying activities. Once you have found a safe location, take some time to practice flying your Drone before attempting any tricks or stunts.

Finally, when you feel confident in your abilities as a pilot, go out and enjoy yourself! Flying a drone can be an incredibly enjoyable experience - just make sure to follow all safety guidelines and regulations so that everyone can stay safe while having fun

- **Commercial**

Drone technology has revolutionized the way businesses operate and has created new opportunities for commercial purposes. Here is everything you need to know about flying a drone for commercial purposes.

Drones are unmanned aircraft that are controlled by a remote pilot or by an onboard computer. They can be used for various purposes, such as surveillance, photography, and delivery. Drones have become increasingly popular in recent years due to their many advantages over traditional aircraft. For example, drones can fly at lower altitudes than helicopters and airplanes, making them ideal for capturing photos and videos of events or locations that would otherwise be inaccessible. In addition, drones are much quieter than traditional aircraft, which makes them perfect for stealth operations.

**There are a few things to keep in mind when flying a drone commercially.**

- ☐ First of all, it is important to obtain the proper certification from the Federal Aviation Administration (FAA). Without this certification, it is illegal to operate a drone for any commercial purpose in the United States.

- Secondly, businesses must also obtain insurance coverage in case of any accidents or damages that may occur during flights.
- Finally, when it comes time to actually fly your Drone commercially, there are some strict guidelines that must be followed. For example, drones must always remain within the visual line of sight of the operator, and they can only fly during daylight hours unless special permission has been obtained from the FAA.

Additionally, drones cannot fly over populated areas or near airports without prior approval from the air traffic control tower. It is important to follow all local laws and regulations regarding drone use. Failure to do so could result in hefty fines or even jail time.

One of the main areas of misunderstanding for the drone community has been how to distinguish between commercial and recreational drone flight. Which regulations apply to you will depend on what category your drone activity comes under.

For context, Section 44809 of Chapter 447, Title 49 of the United States Code, governs recreational drone operators. The "**Exception for restricted leisure operations of unmanned aircraft**" is how it is more formally known. This law, which was only recently put into effect (in May 2019), brings closure to the long-debated issue of what regulations apply to drones being used for fun in US national airspace.

Section 44809 is an EXCEPTION, as its name implies. This means that unless they meet all the requirements of Section 44809, drone pilots must presume that they are within the jurisdiction of Part 107.

**The following are these clauses:**

- ☐ The aircraft is only used for leisure purposes when flying (determined by the intent of the flight)
- ☐ The aircraft is operated in compliance with or within the programming of a set of safety regulations developed in collaboration with the Federal Aviation Administration by a community-based organization.
- ☐ The pilot of the aircraft or a co-located visual observer who is in direct communication with them both flies the aircraft within their line of sight.
- ☐ The aircraft is flown so as to give way to and not interfere with any manned aircraft.
- ☐ The operator obtains prior approval from the Administrator or designee before operating in Class B, Class C, or Class D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport. They also adhere to all airspace restrictions and prohibitions.
- ☐ The aircraft is flown in Class G airspace from the surface to a height of no more than 400 feet while adhering to all airspace regulations.
- ☐ The operator maintains evidence of test success to be made accessible to the Administrator or law enforcement upon request and has passed the aeronautical knowledge and safety test provided in paragraph (g).

The aircraft is marked and registered in accordance with chapter 441 of this title, and upon request, the Administrator or a representative of the Administrator or law enforcement is given proof of registration.



To be clear, a drone pilot cannot claim to be operating under Section 44809 regulations unless they have complied with ALL eight requirements. The first bullet point—the necessity to only fly for pleasure purposes—is likely the most difficult and frequently misunderstood.

How would you define recreational flight? Generally referred to as "flying for fun," this is actually any drone operation that is not carried out for profit. Commercial drone operations encompass both flying a drone for business purposes and doing so with the ultimate goal of making money from it.

## **Drone Insurance**

As the use of drones for commercial purposes continues to grow, so does the need for drone insurance. Here are some things you need to know about drone insurance:

Drone insurance is a type of liability insurance that protects businesses and individuals from financial losses that could occur as a result of operating a drone.

### **Why do you need it?**

If you operate a drone for business purposes, then you likely already carry general liability insurance. However, most general liability policies exclude coverage for damages caused by drones. That's where drone insurance comes in - to fill the gap and protect your business from potential losses associated with operating a drone.

### **How much does it cost?**

The cost of drone insurance varies depending on factors such as the type of business, the size of the drones being operated, and the amount of coverage

desired. However, rates typically start at around \$500 per year for basic coverage.

## **How to Renew Your License**

If you're a drone operator, you know that renewing your license is important to keep your skills sharp and up-to-date. Here are some things to keep in mind when renewing your drone license:

- First, make sure you have all the required documents.

This includes a current photo ID, proof of address, and any other documentation required by the FAA. Next, schedule an appointment with an FAA-certified flight instructor. They will go over everything you need to know about flying drones safely and legally.

- Next, you'll need to submit a new application for a Certificate of Waiver or Authorization (COA).

This can be done online through the FAA's website. Be sure to include all of the required documentation, such as proof of insurance and an updated flight plan.

Finally, once your COA is approved, you'll need to pay the renewal fee and schedule an inspection of your drone equipment. Once everything is in order, you'll be ready to continue flying!

Finally, take the time to review the Drone Operator's Manual before your appointment. This will help ensure that you understand all the necessary regulations surrounding drones. By following these simple steps, you can easily renew your drone license and stay up-to-date on all the latest information!



# CHAPTER FOUR

## Airman Certification Standard

The airman certification standard (ACS) is the Federal Aviation Administration's (FAA) comprehensive guide for what a pilot must know to pass their practical test. It contains all the information necessary for a safe and successful flight, from pre-flight checklists to in-flight emergencies. The ACS is an invaluable resource for any pilot and should be consulted before every flight.

- ☐ **The first step in using the ACS is to familiarize yourself with its contents.**

The table of contents can be found on the FAA website or in front of the printed version of the document. Once you know what topics are covered in each section, take some time to read through it thoroughly so that you understand all the information presented. If there are any concepts that you don't fully understand, ask a certified flight instructor (CFI) for clarification.

Once you have a good understanding of what is contained in each section of the ACS, use it as your go-to reference when preparing for your practical test. Reviewing specific sections prior to your test will help ensure that you are adequately prepared and confident on exam day

**The ACS is divided into three main sections:**

- ☐ Airplane,
- ☐ Rotorcraft, and
- ☐ Balloon.

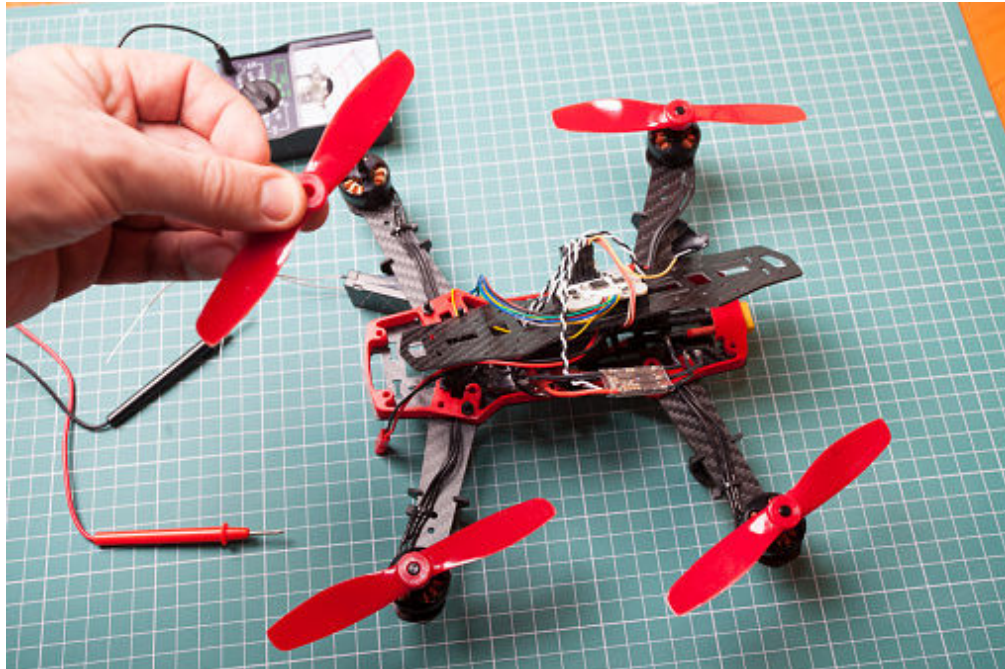
Each section contains a list of tasks that must be completed in order to demonstrate proficiency in that category.

To obtain a Private Pilot certificate, an applicant must complete the tasks listed in the Airplane section of the ACS. These tasks include **pre-flight procedures, takeoffs and landings, maneuvers, and post-flight procedures**. In addition, applicants must also pass a written exam and oral exam administered by an FAA examiner.

The rotorcraft section of the ACS contains task lists for both helicopters and gyroplanes. Applicants must demonstrate proficiency in pre-flight procedures, takeoffs and landings, maneuvers specific to their chosen type of rotorcraft, and post-flight procedures. As with airplane pilots, those seeking a Private Pilot certificate for rotorcraft must pass both written and oral exams given by an FAA examiner.

Like airplane pilots, those seeking a Private Pilot certificate for balloon operation must pass both written and oral exams given by an FAA examiner. However, the practical test for ballooning consists solely of an oral flight test administered by the applicant's instructor. There are no separate task lists or ground schools required as part of the certification process.

## **Maintenance and Flight Procedure**



Drones are becoming increasingly popular for both personal and commercial use. As the technology continues to develop, it is important to understand both the maintenance requirements and proper flight procedures for drones. By following a few simple steps, users can ensure their Drone is in good working condition and avoid any potential accidents while flying.

Maintenance for drones typically includes regular cleaning of both the exterior and interior of the device. This helps to prevent dirt and debris from interfering with sensors or other components. In addition, it is important to check that all batteries are charged and that there are no loose parts on the Drone itself. If any repairs are needed, it is best to consult with a professional before attempting them yourself.

When it comes to maintaining a drone, regular cleaning is key. After each flight, be sure to wipe down the body of the Drone as well as the propellers. This will help remove any dirt or debris that could potentially damage the machine. In addition, it is important to check all the connections and batteries before each flight to make sure everything is secure and fully charged. By

taking these basic steps, users can keep their drones in good condition for years to come.

As far as flying goes, there are a few things users should keep in mind when operating a drone.

First of all, always be aware of your surroundings and avoid crowded areas where your Drone could pose a danger to others.

Secondly, make sure you stay within the visual line of sight of your machine at all times - if you lose track of your Drone even for a few seconds, it could end up crashing into something or someone nearby.

Lastly, listen carefully to any instructions provided by air traffic control if you are flying near an airport - failure to do so could result in serious penalties. Following these simple guidelines will help ensure safe and enjoyable flights with your new Drone.

## **Weather Information and Documents**

When it comes to operating a drone, there are a few things you need to keep in mind in regard to weather.

First and foremost, you need to be aware of the current conditions as well as any forecasted changes. This information can be obtained through various sources, such as the National Weather Service or your local news station.

Secondly, you should have a plan in place in case inclement weather does occur while you are flying your Drone. This could include having an alternate landing spot or route mapped out.

Finally, it is important to check for any restrictions that may be in place due to the weather before taking off.

While drones have become more popular in recent years, there are still many people who are unaware of how they work or what is needed to operate one safely and legally. When it comes to getting weather information and documents for drones, here is everything you need to know:

The first step is understanding what types of weather conditions are conducive for flying a drone- this includes both temperature and wind speed limits that have been set by the FAA. You'll also want to understand what NOT to do. Flying- like near thunderstorms or hurricanes. If you're unsure about the current conditions, The National Weather Service website is a great place to start- they even have a section dedicated to drone pilots! from there, you can either check the forecast yourself or sign up for alerts so you're always in the know about upcoming inclement weather.

Once you have a good understanding of when it's safe to fly and when it's not, put together a contingency plan just in case adverse weather conditions do pop up unexpectedly. This might involve having an alternate landing spot mapped out or knowing ahead of time where you can take shelter if necessary.

Lastly, before taking off on any flight mission, make sure to consult with local authorities about any restrictions which may be in place due to the current weather conditions - better safe than sorry.

## **Effects of Weather on Unmanned Aircraft**

The Drone's functioning constraints in relation to the weather conditions must be known by the remote pilot. For some drone models, like the Phantom 4



and Mavic, inclement weather conditions include winds over 20 knots, snow, rain, and fog.

## **How the environment impacts UAS operations**

The weather may significantly affect flights, whether they involve an airplane, a helicopter, or a drone, as is well known. However, different types of bad weather can affect drones in various ways than you might anticipate, including:

- ☐ **High winds:** Drones can be blown off course by high gusts, making them difficult to control during takeoff, flight, or landing, leading to a crash.
- ☐ **Water damage:** When precipitation enters a drone, it can damage electrical components, rendering it unusable and leading to a crash. So, in wet conditions, most drones have restricted capabilities.
- ☐ Colder temperatures can significantly shorten battery life, affecting the range and flight times of drones.
- ☐ **Low visibility:** Flying in low visibility situations, such as fog or clouds, can make it more difficult for drone cameras to collect visual data, spending time and money on flights that don't succeed.
- ☐ **Lightning:** There's a good probability that lightning will seriously harm your Drone and its capabilities if it strikes it or something nearby.

## **Weather Effects on The Performance Of Unmanned Aircraft**

The weight of the aircraft, the weather, the environment on the runway, and the fundamental physical laws that control the forces operating on an aircraft are some of the variables that determine how well an aircraft performs.

- **Wind Effects of Obstacles**

There is also another atmospheric risk that could cause difficulties for pilots. Ground obstructions can alter the direction of the wind and pose an invisible threat. Large structures and the topography of the ground can disrupt the wind's flow and produce gusts of wind that change direction and speed suddenly. These impediments include both substantial man-made obstructions like hangars and substantial natural obstructions like mountains, bluffs, or canyons.

The magnitude of the obstruction and the wind's primary velocity both affect how much turbulence is caused by ground impediments. Any aircraft's performance may be impacted, and this poses a very serious risk.

When flying over mountainous areas, this similar issue is even more obvious. The wind on the leeward side of the mountain does not behave similarly; nonetheless, the wind flows easily up the windward side of the mountain, and the upward currents assist in carrying an aircraft over the mountain's peak. The air follows the contours of the mountain's leeward side as it descends, becoming more turbulent as it does so. This frequently causes an aircraft to crash into a mountainside. The amount of downward pressure and turbulence increases as the wind speed increases.

- **wind tearing**

A very small area experiences a quick, significant change in wind direction or speed. An airplane may experience strong updrafts and downdrafts due to wind shear, as well as sudden changes in the plane's horizontal movement.

An airplane is in danger from wind shear. It can abruptly alter an aircraft's performance and interfere with its usual flight attitude. For instance, an abrupt change from a tailwind to a headwind increases airspeed and performance. In contrast, a change from a headwind to a tailwind results in a reduction in airspeed and performance. In either scenario, a pilot must be ready to respond swiftly to these adjustments in order to keep the aircraft under control.



# CHAPTER FIVE

## Traffic Pattern



The air traffic controller today directs aircraft across the sky all over the world. In order to keep the aircraft safe, each controller is in charge of a particular area of expertise. They do this by speaking with the pilots directly over radio communications. According to reports, a human-centered system can no longer handle the majority of commercial flight traffic. A computerized system that can monitor and control this increasing activity is needed to address this excessive expansion. This system is known as UTM or unmanned traffic management.

### **What UTM Does**

- Unmanned traffic management is a system that consists of humans, rules, vehicle technologies, software, and other components.
- Gives information to drone operators, aircraft, and coordination organizations. This contains updates on the status of the airspace, such as weather alerts and information on nearby flights.
- Enables data interchange between the same users, the Federal Aviation Administration, and public safety organizations.
- Drone operators can submit flight plans to carry out a specified mission in low-altitude airspace thanks to unmanned traffic management.
- figuring out how to properly enable single or multiple drone operations, either within the pilot's line of sight or outside it

Drone flight authorization and drone flight disputes are managed via the drone traffic management system. It is responsible for working with manned aircraft and their air traffic control systems, as well as for ensuring that low-altitude airspace regulations are followed. The drone traffic management system may receive information from it to help in decision-making. In order to request fly authorizations and to routinely report the status of drone flights, drone operators can link to the drone traffic management system. In order to help the drone traffic management system keep track of the current situation of the airspace, telemetry data can be sent.

### **The current state of UTM**

In order to enable multiple beyond visual line-of-sight drone operations at low altitudes (under 400 feet above ground level (AGL) in airspace where

FAA air traffic services are not provided), NASA, the Federal Aviation Administration (FAA), and other federal partner agencies are working together to explore operational concepts, data exchange requirements, and a supporting structure. To enable safe visual and beyond-visual line-of-sight drone flights in low-altitude airspace; research and testing will be used to determine the airspace operating requirements.

## **Security Issues**

With a global and ongoing increase in demand for drones' multipurpose uses, the world has recently seen a large increase in the number of utilized drones. These drones' ability to meet needs is what makes them so commonplace. Users of drones now have access to a bird's eye view that can be used almost anywhere and at any time. But more lately, both traditional criminals and cybercriminals have started to employ drones for harmful purposes. The likelihood and frequency of these attacks are both high, and they have the potential to have disastrous consequences. As a result, the necessity for investigative, preventative, and protective countermeasures is crucial.

Drones are susceptible to several threats because of their dependency on wireless connectivity. Significant damages, both economic and non-commercial, may result from these attacks. In this situation, it is unclear how hackers carry out their attacks and take control of a drone in order to intercept it or possibly cause it to crash. In actuality, drones can be hacked and used for bad intentions. Therefore, it's important to find them and stop them before they can do any harm.

**Ways to stop harmful drone systems from operating and how to secure drones. The following is a summary of these contributions:**

- ☐ Recognizing the primary design of drones and the different ways they communicate.
- ☐ Concerns about drone security and privacy are covered, focusing on drone weaknesses, threats, and assaults.
- ☐ The current defenses against security risks and vulnerabilities for drones are examined, along with defenses against compromised (evil) drones.
- ☐ Last but not least, recommendations for future study directions are provided, along with limitations of the existing studies.

**The civil aviation authority launched its drone code, according to British Broadcasting Corporation (BBC) News [21], to clarify the regulations that each drone owner must adhere to.**

- ☐ Never fly the Drone higher than 400 feet.
- ☐ Keep the Drone away from airplanes, helicopters, airports, and airfields at all times.
- ☐ Fly safely, or you'll get in trouble.
- ☐ Drones carrying cameras should not be flown, according to experts:
  - ☐ Fifty meters or less from persons, cars, buildings, or other structures.
- ☐ Overcrowded events like concerts or sports games.

By the end of July 2018, several of these regulations had already taken effect and barred all drones from flying higher than 400 feet. In actuality, offenders might face up to five years in prison or an unlimited fine.



## **What to Do Immediately After A Drone Accident**

Drone crashes are occasionally unavoidable and might be brought on by an error or an unforeseen circumstance. Even the most skilled drone pilots frequently have accidents. Being prepared for a drone accident is just as important as being careful with your Drone. What then happens if your Drone crashes?

### ☐ **body inspection of the Drone**

Your Drone will probably have some dirt on its body when you recover it from an accident. The quickest method to identify any hidden damage is to remove any visible dirt. Be careful to inspect the Drone's complete body for any breakage, dents, or cracks.

### ☐ **Checking the propeller**

The air movement and lift that propellers produce allow the Drone to fly. They rotate at high speed as a result, and the propellers are carefully balanced as a result. This guarantees that the high speeds won't result in vibrations that can prevent your Drone from flying. The propellers should therefore be repaired if they sustain any damage, such as chips, dents, or splits. Regardless of how serious or insignificant they may be, fix them. Because they protrude from the rest of the drone body and are rather delicate, the propellers are the main casualties when collisions happen to drones.

### ☐ **Checking of the Fittings**

In this step, the motors should be the main focus. This is because your Drone will vibrate more than usual if its motor has loose mounting. Due to lose fittings, the rotating components, such as the motors and propellers, may roll or shake. There is a chance that doing this will make your Drone unstable.

As a result, if your Drone crashes, check to see if all the parts are in good condition so that the following flight will go off without a hitch. Repeat the fittings examination if you notice any flight instability.

#### ☐ **Wiring analysis**

Drones are made up of numerous cables that supply the entire gadget with power and control signals. After a crash, check your Drone for damage and make sure all wire connections are secure. You should also check the visible wires because they may occasionally have been damaged during the crash due to cracks, breaks, or burns.

When a drone crashes, fluids may leak. If these fluids come into contact with wires, your next flight may be canceled, and your Drone may suffer permanent damage.

#### ☐ **Where to send or go to get your Drone fixed**

Don't worry if the drone repair is too difficult for DIY since there are other repair choices.

Sending it back to the maker of your Drone is your first choice. However, it would be advisable to first search online to see if they have retail partners or authorized drone repair locations in your area. Reaching out to them to see if they can get your Drone serviced soon will likely save you time and money if they have one nearby.

You can return it to the manufacturer for repairs if they don't have a list of nearby retailers. However, you need to find out if the Drone was covered by a warranty. You'll be responsible for the repair fees if the item is out of warranty or has passed its expiration date. Due to the fact that insurance would cover repair costs in the event of a crash, drone owners are encouraged to make sure their equipment is insured.

## How to Report A Drone Accident

As a drone operator, you should be aware that a crash with your machine has the potential to seriously hurt someone or their property. If you operate a commercial drone and it crashes, you might need to file a crash report. How can you tell if you need to report something?

- ☐ If anyone was hurt as a result of the collision
- ☐ If the collision resulted in material damage exceeding \$500
- ☐ Making an emergency response plan is step one.

Although technically the action you take right away after the crash occurs, this is the first step to take in reporting a crash, and you should have the plan prepared before a crash happens.

You should have a solid strategy in place for this stage to cope with the harm and destruction your Drone caused. Additionally, you ought to keep a first aid kit and a fire extinguisher close by. You also need a cell phone with adequate coverage so you can call 911 in an emergency.

- ☐ **Determine how serious the drone crash damage is.**

All drone mishaps do not need to be reported to the FAA. For instance, if no one was wounded or no property was seriously damaged, reporting the incident is not necessary. On the other hand, you must report if someone was wounded or if significant property damage occurred.

- ☐ **Notify the FAA and NTSB of a serious drone crash right away.**

Some serious drone mishaps involved mid-air collisions that badly injured people. Such accidents must be reported very away because, in the NTSB's

opinion, they are considered severe.

You do not need to report a drone crash into a tree, though, if no property was destroyed. Important: If the crash was severe, avoid tampering with the evidence.

- ☐ **Post an incident report on the FAA Drone Zone.**

You have ten days to submit your report. Any drone crashes that caused significant material harm or financial loss are included in the study. Also, any damage that costs more than \$500 needs to be reported to the FAA.

## **How can a drone crash be reported**

Drone crashes must be reported to the FAA for a variety of reasons, including the fact that doing so enables them to better regulate and promote aviation security. This is especially true once they discover what led to the drone crash.

A drone pilot will incur civil fines if they don't report a drone crash. Additionally, while reporting a drone crash, you must give the FAA all pertinent information as required. The processing of the report may be delayed if all pertinent information is not reported.

It's simple to report a drone crash, and the greatest part is that you can do it online. You can quickly fill out and submit the FAA accident/incident reporting forms by clicking on the link. The details you need to provide in your report are listed below.

- ☐ The Drone's aircraft identification number
- ☐ Name, contact information, and email address of the drone operator.

- ☐ Date and time of the drone crash, precisely
- ☐ where the Drone crashed
- ☐ a basic account of the incident

## **How to Track A Drone**

GPS drones have a GPS module that enables them to determine their position in relation to a system of orbiting satellites. The Drone can carry out tasks including position hold, autonomous flight, return to base, and waypoint navigation by connecting to signals from these satellites.

The simplest explanation is that especially when the sun sets, searching from the air may be the most efficient method. To locate your missing Drone while on foot, pay close attention to sound and light. The Drone's propellers may buzz if it is powered. If it is stuck in a tree, it will create noise.

RF sensors can be used to track RF-operated drones, while radar detection can be used to track GPS-preprogrammed drones that are flying in a specific direction.

To validate a drone threat, visual detection technology like Pan, Tilt, and Zoom (PTZ), Cameras can be utilized to obtain images of the suspected Drone.



## **CHAPTER SIX**

### **Who Is Eligible For The Certificate?**

## **Instructions on how to become certified to operate part 107 drones**

Watch one of our free online video lectures or enroll in a part 107 training course.

- ☐ You must be at least 14 years old to take the test.
- ☐ Your remote pilot certificate can only be obtained if you are at least 16 years old.
- ☐ (As confirmed by the FAA on 8/27/2021)
- ☐ pass a preliminary test of aeronautical knowledge.
- ☐ Undergo a Transportation Security Administration inspection.

### **To become certified under Remote Pilot Part 107.**

- ☐ pass a 24-month recurrent aeronautical knowledge exam.
- ☐ Additional FAA specifications:
  - ☐ A remote pilot is expected to deliver their Drone for inspection along with any related paperwork and records that must be retained upon request from the FAA or an FAA administrator.
- ☐ Remote pilots are required to notify the FAA of incidents within ten days if there are serious injuries or \$500 or more in property damage.
- ☐ Remote pilots are required to check their drones and remote controller before takeoff to make sure they are both safe to use.



## **Certificate of Waiver or Authorization**

Before Part 107 was implemented, there were two different forms of authorization that could be used by anybody who wanted to fly drones for business purposes: A Section 333 exemption or an FAA Certificate of Authorization (COA). An operator or organization may be given a Certificate of Authorization for a particular drone activity.

Despite how simple it is to apply for a Part 107 remote pilot certificate, some organizations and drone operators still choose to obtain an FAA COA.

### **Why is the FAA COA so unique?**

One benefit of a COA is that it grants the drone operator more autonomy. Even having a Part 107 drone license, an operator or organization with a COA could be authorized to fly a drone in situations that would otherwise be prohibited. These are still governed by the conditions stated in the particular COA that has been granted.

It must be emphasized, nevertheless, that not just any drone operator or organization may receive a COA. The COA is normally only granted to government organizations, particularly those focused on public safety. However, COAs may also be given to local governments and public schools for the benefit of instruction, training, or day-to-day operations.

The FAA and Air Traffic Organization issue three main categories of COAs, each with various degrees of autonomy:

#### ☐ **Blanket COA 1**

The sort of COA that offers the most freedom is a blanket COA. A drone operator that has a Blanket COA is not constrained by any particular jurisdiction or area of land when flying. Drone flight must still be limited to

visual line-of-sight, and airspace authorization is still required for flights within five miles of airports.

#### ☐ **A COA with jurisdiction**

A jurisdictional COA is a location-bound COA, as its name suggests. As long as drone operations are limited to the area for which the COA has been granted, it typically offers a higher level of autonomy. An operator who has been given a Jurisdictional COA, though, may be able to fly a drone at night, in restricted airspace, or more than 400 feet above ground level. However, they must still fly within visual line-of-sight restrictions.

#### ☐ **Special COA**

Emergency service organizations or municipal governments that must employ drones to respond to an emergency are issued emergency COAs. Although a Blanket or Jurisdiction COA is normally only given to organizations that have already obtained one, the Emergency COA option is available for privileges that are not covered by those COAs.

Only emergencies or circumstances with a very high likelihood of loss of life are eligible for the use of an Emergency COA. Emergency COAs are frequently requested and given out on short notice due to their very nature. Experience has shown that the FAA can respond to a request for an Emergency COA in three hours or less.

## **What Are Sectional/Navigational Charts**



Pilots use sectional charts as navigational aids to locate airports, obstacles, and terrain. Aeronautical charts, in contrast to maps, which only show topographical data, also show data on different types of airspace, radio frequencies, and airspace. Sectional charts are 20.75 x 59.25 inches in size and can be conveniently stored in a packet measuring roughly 10.25 x 5 inches. Charts are made on sturdy paper that may be folded and refolded by pilots as needed for convenience on various trips.

VFR Raster Charts is the name for the digital equivalents of VFR charts. Sectional charts are available digitally through Electronic Flight Bag services like Foreflight and Garmin Pilot. Additionally, FAA Approved Print Providers sell them.

Sectional charts are "intended for visual navigation of slow to medium speed aircraft," according to the FAA. VFR (visual navigation rules) charts come in a variety of forms, including sectional charts.

## **Benefits of a Sectional Diagram**

For a common pilot error known as an "airspace bust," such as entering Class C or Class B airspace without proper notification or consent, sectional charts are a VFR pilot's greatest defense. Prior to entering Class B, Class C, or Class D airspace, the pilot must get ATC clearance or comply with radio communication rules.

Maximum elevation figures, or MEFs, represent the height of the highest geographical point in a certain area. By flying an otherwise airworthy aircraft into the ground, a controlled flight into terrain accident (CFIT) can be prevented. The pilot typically isn't aware of the imminent impact until it's too late in CFIT instances.

### **A sectional chart has drawbacks**

Charts might look cluttered and contain symbols and abbreviations that are difficult to interpret or decipher. In the absence of review before a flight or check ride, pilots could find it difficult to recognize less prevalent facts.

The chart's validity is limited to 56 days for most locations and one year for specific regions of Alaska. When utilizing paper charts, pilots must verify that their chart or chart supplement is the most recent edition by consulting the FAA website's Dates of Latest Editions (DOLEs) page. Sectional charts always become valid and expire on Thursdays, while the precise change dates fluctuate every year.

## **How to Read A Sectional Chart**

### **Using the Sectional Chart Legend in Step One**

The symbols and representations on sectional charts are explained in several non-FAA publications by flight schools and aviation authorities. However,

the chart legend on the back flap of the chart itself is the best resource for reviewing the symbology you're seeing.

□ **Knowing the latitude and longitude is step two.**

The longitude and latitude of any particular geographic point on a sectional chart can be used to find it. On a sectional chart, a quadrant is a region defined by the checked lines that separate every 30 minutes of latitude from every 30 minutes of longitude.

□ **Check the airports and airport information in step three.**

Some of the most significant symbols on a sectional chart include airports. In addition to locations, sectional charts will show whether an airport has a control tower, the length of a runway, whether it is lit, and the availability of fuel. Pilots should, of course, regularly check for new Notices to Airmen (NOTAMs).

#### **Step 4: Getting Around Terrain and Hazards**

VFR pilots should check a planned route for hazards and terrain and make sure the anticipated en-route altitudes are suitable for the flying direction. Pilots should make sure the terrain is adequate for safe landings in the event of in-flight crises, in addition to the legal requirements for maintaining distances from terrain and obstacles.

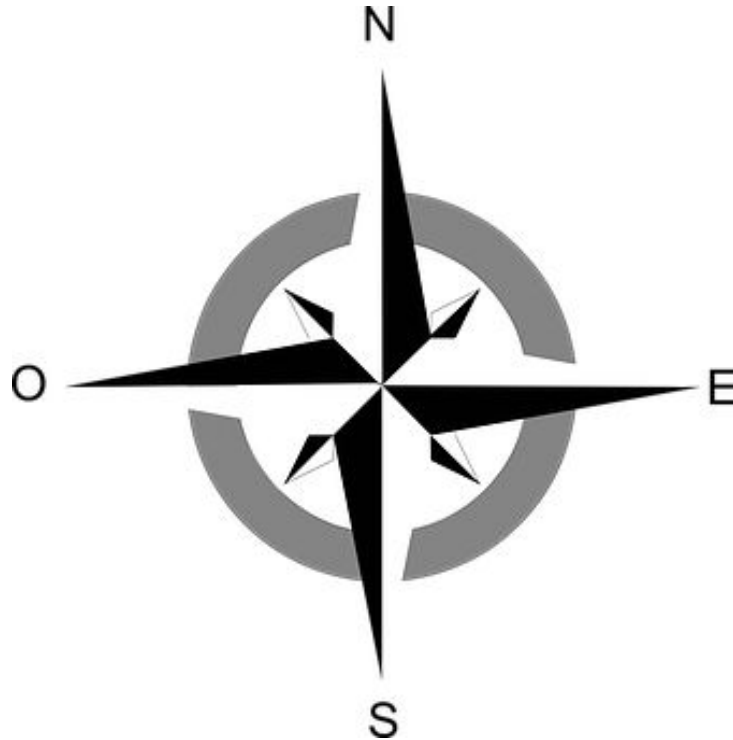
#### **Step 5: Recognizing Different Types of Airspace**

For pilots at all levels and for aspiring students learning to fly, understanding airspace is essential. In addition to making sure weather minimums are met and that their aircraft comply with technical specifications for specific

airspace, pilots must make sure their route avoids forbidden or restricted airspace.

# CHAPTER SEVEN

## Longitude and Latitude



Let's review the fundamentals of map reading before moving on to sectional charts. Latitude and longitude coordinates, which are defined by an illustrative grid pattern, can be used to pinpoint the location of any place on the Earth. We must first identify the locations of the equator and the prime meridian in order to distinguish between latitude and longitude with ease.

A line connecting the North and South poles travels through Greenwich, England, and is known as the prime meridian. All other longitudes, or lines that travel from North to South, are measured using this as the "zero longitudes," or starting point.

The equator is situated parallel to the prime meridian. It is located in what is essentially the "zero latitudes," which is where the North and South poles are equally far from one another. All other latitude lines are perpendicular to the equator, and their lengths are determined by the distances between them.

Latitude and longitude coordinates can be stated in one of two main ways. A system of degrees, minutes (1 degree = 60 minutes), and seconds (1 minute = 60 seconds) is used in the older technique. The majority of contemporary GPS devices use decimal notation by default to express latitudes and longitudes. However, switching between the two approaches is simple.

A pair of latitude and longitude measurements can be used to identify any location in the world. Before moving on to more difficult topics, you will need to master one of the most fundamental aspects of map reading.

The entire map is divided into quadrants for better sectional chart delineation of smaller areas. An area inside 30 minutes of latitude and 30 minutes of longitude is referred to as a quadrant. Pilots can quickly refer to quadrant identifiers while pointing to distinct yet large areas on sectional charts.

## **Flying Around Airports**

As a drone pilot, it is your obligation to determine whether you are operating within regulated airspace. Fortunately, doing this is now really simple. There are now a ton of mobile apps available that will display the location, size, and restrictions of the restricted airspace in each airport. There are more than a dozen apps out there, but B4UFLY (available for both Android and iTunes) is one of the most commonly suggested ones.

Following a Facility Map, often known as a "grid," every airport in the nation that is situated within regulated airspace adheres to the rules. The



altitudes that the pilots might ask to fly up to are indicated by these "grids." In increments of 50 feet, they range from 0 feet (no flying permitted) to 400 feet.

The FAA UAS Facility Map website or one of the aforementioned apps, like B4UFLY, both provide facility maps for every airport in the US.

The FAA includes a Part 107 knowledge test for commercial drone pilots because it views the ability to recognize controlled airspace as one of the most crucial skills of drone pilots. However, recreational drone pilots are equally subject to the limitations of flying in restricted airspace. The Low Altitude Authorization and Notification Capability was released by the FAA in 2017. With the help of this system, drone pilots can request authorization to fly in regulated airspace and get a response practically immediately. The FAA created it with input from a number of stakeholders, including drone flight organizations, manufacturers, and operators.

Requests for flights in regulated airspace are automatically granted by the FAA through the LAANC system. This makes the approval procedure quicker and less taxing on the ATC.

Another benefit of a centralized system is that it makes it possible for the FAA to approve requests in the context of more urgent or brief limitations, like temporary flight restrictions (TFR) or Notices to Airmen. If drone operators have been flying in the same area frequently, they might not be aware of these limitations.

Any of these channels may be used to obtain real-time authorization by Part 107 pilots. We advise you to give Kittyhawk a try. If pilots desire to fly higher than the ceiling of any restricted area, they can also ask for "further coordination." However, it could take up to 90 days for a request for more coordination to be approved.

You should get a response to your request within a short period of time after submitting it. The response will come in the form of a text message that details the terms of the approval, including the maximum altitude that is permitted and the permitted flight area. Drone operators must maintain contact with the FAA even after permission in case the agency needs to reach out to them for any reason.

## **Risk Management**

Insist on certain fundamental safety precautions if you do decide to use a drone or if you permit someone else to use one on your property. There are few official safety criteria for flying a drone because the FAA currently has no laws governing them. However, the FAA has provided some suggested rules for drone operators, and common sense offers a few more. Combining them, the following is a fundamental list of safety precautions, which is not all-inclusive:

- ☐ Never take off or land a drone more than 400 feet in the air;
- ☐ Maintain the Drone in the operator's field of vision;
- ☐ Never fly a drone within five miles of an airport;
- ☐ Flying over crowds of people should be avoided;
- ☐ Never operate a drone at night;
- ☐ Fly the drone at least 25 feet away from people, and
- ☐ use a designated place that is free of people to take off and land.
- ☐ Learn about the legal restrictions as well, such as if your state forbids drones from flying over private property and whether a

permit or license is required.

Drones are now a common sight in our skies, whether used for commercial or recreational purposes. Modern drones are not innocent bees, but neither are they as innocuous as their military predecessors. Therefore, before you fly, be sure that you are aware of the fundamental safety precautions, that you're willing to adhere to them, and that you have enough insurance coverage. This will increase the likelihood of successful landings.

## **Aeromedical Factors and Emergency Procedures**

The use of drones is becoming increasingly popular in a variety of industries, including aeromedical factors. This technology can be used to transport medical supplies and personnel to areas that are difficult to access by traditional means. In addition, drones can be used to provide rapid response in emergency situations. There are a number of factors that need to be considered when using drones for aeromedical purposes, including:

The type of drone being used: There are a variety of drone types available on the market, each with its own advantages and disadvantages. It is important to select the right type of drone for the specific application.

- **The weight and size limitations:** Drones have weight and size limitations that need to be considered when transporting medical supplies or personnel. These limitations will impact the amount of time it takes to complete the mission as well as how many stops will need to be made along the way.
- **Weather conditions:** Inclement weather can impact both the safety and effectiveness of using drones for aeromedical purposes. It is

important to consider current and forecasted weather conditions when planning any sort of.

Drones are becoming increasingly popular for a variety of purposes, including emergency procedures. When used correctly, drones can provide a valuable tool for responding to emergencies and saving lives.

**Here are three ways that drones can be used during emergency situations:**

- a. **Search and rescue:** Drones can be used to quickly search large areas for missing persons or survivors following a natural disaster or other emergencies. They can cover more ground than traditional search teams, and their thermal imaging cameras can help locate people even in difficult-to-reach places.
- b. **Delivering supplies:** In some cases, it may not be possible or safe for first responders to reach an emergency situation directly. Drones can be used to deliver essential supplies like food, water, and medicine to those in need.
- c. **Providing information:** One of the most important roles that drones can play during an emergency is providing real-time information about the situation on the ground. This information can help first responders make critical decisions about how best to respond to the crisis at hand.



# CHAPTER EIGHT

## How to Communicate

**There are three possible channels for this communication. Each is discussed in this paragraph.**

- **RADIO FREQUENCY:** The drone can be remotely operated by the controller using this wireless communication method. To instruct the drone to carry out specific tasks, the controller uses the remote to transmit a radio signal to it.

Each controller for a drone has a transmitter. The radio signal is received by the receiver after being sent by the transmitter to the drone. Drones can communicate with their controller in this way.

The transmitter and receiver must be on the same frequency for communication to be accurate and reliable. Due to their ability to pass through thicker surfaces, low frequencies are employed to control drones successfully.

- **WI-FI CONTROLS:** Devices other than computers can now access WiFi. Devices can now be integrated with Wi-Fi thanks to this technology, simplifying the connection process.

Wi-Fi is being used to control some drones, which is an illustration of how technology is developing to enhance how we live. Most Wi-Fi-connected drones are used to transmit movies to tablets, PCs, and cell phones via a controller. These gadgets can also be used for remote control.

WiFi has a range restriction; however, it only works up to 600 meters and needs an ultra-high frequency.

- **GPS:** One method of communication between drones and their operators is through the use of GPS. This aids the controller in instructing the drone on its course. When Using GPS, a drone can be instructed to fly in a particular direction.

## Some Radio Frequencies



When working with FPV Quadcopter drones, the two most popular frequencies are 2.4 GHz and 5.8 GHz.

The typical RF frequency used by quadcopters to connect their ground transmitter to their drone is 2.4 GHz. If you are familiar with frequencies, you may already be aware that wireless computer networks operate at 2.4

GHz. So, despite how predictable it may seem, there have been a number of occurrences involving Flying objects losing control in densely populated regions with excessive WiFi signals.

Quadcopters' interference with onboard systems is another issue that is related to them. Two transmitters are involved, one for transmitting pilot signals to the vehicle and the other for returning video signals to the pilot, which is primarily the cause of this.

In order to prevent the entanglement of frequencies in the same band, 5.8 GHz is another RF used in quadcopter technologies. The DJI Phantom models typically use this frequency. Let's see how the DJI Phantom Quadcopters evade the most common issues when using radio frequencies.

- **Phantom 1:** This UAV uses 2.4 GHz technology. You must install an FPV yourself and use the 5.8 GHz frequency to prevent typical issues if you intend to do so.

Remember to disable the Wireless Option if you intend to use a GoPro or any action camera with its distinct wireless system. If not, it will obstruct the aerial vehicle. Phantom FC40 - Because it has a separate 3.4 GHz system for transmitting films and photographs to the pilot, this drone uses 5.8 GHz RF to fly.

- **Phantom 2:** This drone's control set operates at 2.4 GHz, so you must utilize add-on kits that send FPV signals at 5.8 GHz frequency.
- **Phantom 2 Vision and Vision+:** These drones employ 2.4 GHz for FPV, connecting to smartphone apps and telemetry, and 5.8 GHz for control.

For a seamless experience, you must utilize an FPV device with a 5.8 GHz frequency if you purchase a Phantom drone or any other drone without a



camera, and vice versa. It's important to keep in mind that both RF signals are considered LOS, or Line of Sight, signals, which means that they won't work if there's anything between the drone and the remote control. The greatest places to fly a drone are in open spaces where it is visible to the naked eye. Otherwise, you run the risk of losing or harming your drone.

## **Visual Line Of Sight**

Similar to how visual flight rules (VFR) apply to manned aircraft, visual line of sight rules (VLOS) do so for tiny unmanned aircraft: VFR refers to a set of guidelines for flying an airplane when the weather permits visibility. The FAA states that the "see and avoid" principle underlies VFR flight.

The Federal Aviation Administration's (FAA) Part 107 rulemaking process created regulations for the operation of small unmanned aircraft systems (UAS), also known as drones. The rule went into effect on August 29, 2016, and included provisions that establish visual line of sight (VLOS) operations as the default operating environment for all drone flights. This means that the remote pilot in command (RPIC) must maintain visual contact with the drone at all times during the flight and cannot use First Person View (FPV) goggles or other devices to extend their line of sight beyond what is possible with unaided vision.

There are several reasons why VLOS is required by law. First and foremost, it ensures safety by allowing the RPIC to see and avoid obstacles at all times. It also allows for better communication between the RPIC and any spotters who may be assisting them; without being able to see each other, it would be very difficult for them to coordinate their efforts. Finally,

maintaining VLOS ensures that law enforcement officials can easily identify who is operating a given drone if there are any concerns about its activities.

While VLOS may seem like a restrictive regulation, it actually provides a great deal of flexibility in how drones can be operated. So long as the RPIC has an unobstructed view of the drone throughout its flight path – which can be achieved through the use of binoculars or even just by standing on high ground – they will be able to fly almost anywhere they want within UAS airspace rules. This makes Part 107 well-suited for a wide variety of applications ranging from aerial photography to agricultural surveying

In manned flight, this notion is often implemented by having a pilot on board who continuously scans the horizon from within the aircraft for any potential collisions with their own aircraft. However, in unmanned flight, the pilot cannot "see" other aircraft approaching their drone. The current FAA regulations state that a drone or small UAS operation must be carried out "within visible line of sight" because of this.

An operator of a small unmanned aircraft (SUA) must always be able to keep the visual line of sight of the SUA they are flying without the use of any technology other than prescription glasses or contact lenses (note that this excludes sight-enhancing technologies such as binoculars or infrared goggles). Visual Line of Sight operations is what this is (VLOS).

### **A Visual Observer is what?**

A Visual Observer (VO) is necessary if a drone pilot cannot keep a visual line-of-sight with the drone during an operation, such as when employing the first-person view.

To ensure that the VO can monitor the drone's position and scan its surroundings to find any potential airspace collision dangers, the VO and

remote pilot in command must be in constant communication. It should be noted that "daisy chaining," or using several successive visual observers to increase the UAS's flight range, is typically not permitted.

A visual observer's fundamental responsibilities are listed in Part 107 Section 107.33.

## **Hazardous Personality Traits**

The FAA lists five risky attitudes that can impair a pilot's ability to make decisions: contempt for authority, impulsivity, invulnerability, machismo, and resignation. Pilots of all levels of experience can reduce risk and make safer judgments in the air by being aware of each of these dangerous attitudes.

- **Don't tell me! is an anti-authority phrase.**

Pilots who lack respect for authority often feel that they are exempt from safety precautions and standards. An anti-authority pilot might, for instance, ignore checklists or disregard instructions from instructors or ATC. Be aware that challenging authority is not the same as having an anti-authority mentality. Pilots are always free to raise an issue with someone in charge if they think something is wrong.

- **Impulsivity: "Get to work right away!"**

Pilots with an impulsive mentality "feel the need to do something, anything, instantly," according to the FAA. A pilot with an impulsive mindset acts on their first thought rather than pausing to consider their options or choose the

best one. Overreacting might result in unreasonable choices like skipping a preflight or hurrying through bad weather to get home. Before making a decision, pilots are advised to carefully consider all of their options.

□ **"It won't happen to me" is invulnerability.**

Not just pilots but many people get the false belief that they are immune to accidents. When pilots disregard the hazards associated with their activities, this attitude of invulnerability might pose a threat to their safety.

□ **"I can do it!" macho**

Pilots with a macho mentality frequently take needless risks in an effort to impress others and establish their worth. Both men and women can develop macho attitudes, which can result in foolish and frequently risky behavior. While pilots must have a high level of self-assurance in their skills, it's crucial to avoid becoming arrogant or overconfident.

□ **Leaving: "What's the use?"**

Finally, pilots who have a resigned mindset lack the conviction and confidence to think they can change their circumstances. When faced with difficulties, these pilots frequently give up quickly and don't take criticism well. This mindset is especially risky for pilots in an emergency because they might feel helpless and succumb to their fate rather than take action.

The truth is that because these dangerous attitudes are a natural aspect of human nature, anyone can exhibit one or more of them. Pilots will be able to make better decisions and stay out of unneeded danger if they are aware of these attitudes and how to spot them when they happen.



# CHAPTER NINE

## What Is NOTAM All About



The Federal Aviation Administration (FAA) issues a Notice to Airmen (NOTAM) to alert pilots of potential hazards along their route of flight. A NOTAM may be issued for any number of reasons, including but not limited to adverse weather conditions, runway closures or repairs, air traffic control changes, or temporary flight restrictions.

While the NOTAM process is designed to keep pilots informed of potential hazards, it is important to note that NOTAMs are not always complete or up-to-date. As such, it is the responsibility of each pilot to thoroughly research their planned route of flight and be aware of all potential risks before takeoff.

If you are planning a flight and see a NOTAM that affects your route, be sure to contact the appropriate authorities for more information. In some cases, you may need to alter your plans in order to avoid flying into hazardous conditions.

FAA's Notice To Airman (NOTAM) system keeps pilots apprised of current conditions along their routes of flight. The system includes airport closures due to construction as well as other obstacles like Temporary Flight Restrictions (TFRs). Although designed with safety in mind, the onus is on the pilot to check for updates and account for any new conditions.

## **How to Check NOTAMs and DROTAMs**

The Federal Aviation Administration's (FAA) part 107 establishes the requirements for checking Notices to Airmen (NOTAMs) and DROTAMs. NOTAMs provide information about potential hazards along a flight route, while DROTAMs identify areas where drones are not permitted to operate.

To check for NOTAMs, pilots must consult the appropriate aeronautical chart or other available resources prior to each flight. The FAA website provides a searchable database of current NOTAMS, which can be filtered by location, date, and time period.

Pilots should also be aware of any changes to the status of their aircraft that could impact its performance or safety; these changes are typically communicated through an Aircraft Status Change Notice (ASCN).

To check for DROTAMS, drone operators must consult the FAA's UAS Facility Map. This map shows areas where drones are not permitted to operate due to safety or security concerns. Operators should also be aware of any Temporary Flight Restrictions (TFRs) that may be in place due to events such as wildfires or sporting events. TFRs can be found on the FAA website.

## **Filling A NOTAM**

The Federal Aviation Administration (FAA) Part 107, commonly referred to as the Small Unmanned Aircraft Rule (SUAR), establishes operating rules for small drones weighing less than 55 pounds. The rule went into effect on August 29, 2016, and applied to all drone operators in the United States.

To file a Notice to Airmen (NOTAM), drone operators must first obtain an FAA-issued remote pilot certificate or be under the direct supervision of a certified remote pilot. They must then register their drone with the FAA and mark it with their registration number.

Operators must submit a NOTAM if they plan to fly their drone in controlled airspace, which includes most airports. To do so, they will need prior authorization from air traffic control (ATC). The process for obtaining authorization varies depending on the type of airspace; however, in most cases, operators can expect to receive approval within ten business days.

Drones are required by law to yield the right of way to manned aircraft at all times. If you see a manned aircraft while flying your drone, you must immediately move out of its way.

In summary, part 107 creates specific regulations for flying drones that weigh less than 55 pounds within U S territory. Operators need certification and permission from authorities before entering controlled airspace near airports. Drones always have a right-of-way over other airborne objects.

## **Challenges of Using Drones**

- ☐ **weather conditions that are unfavorable and resistant to the wind**



**Any type of drone may experience significant difficulties when exposed to high wind speeds.**

A drone's flight path can be disrupted by the wind. Wind also has a tendency to just more unpredictable near lakes and steep inclines, which results in situations that are tougher to respond to if you do not have a drone designed specifically for flying in strong winds. Additionally, the wind tends to blow more quickly at higher elevations than it does at lower altitudes. The presence of strong wind speeds can become a significant obstacle for projects that require the use of a drone to fly at a high altitude for the purpose of efficiently capturing photographs of the location.

If there is a lot of wind, the drone may need to make more frequent course corrections, which will lead it to use up its battery life much more quickly. As a consequence of this, it is probably a good idea to plan for runs that are shorter than usual when the wind is present.

If the effect of the wind is not taken into account during the mapping process, it is possible that the process will be more difficult and require additional time to be spent on the project site. With enough time, you'll be able to steer clear of strong winds and severe weather conditions. However, depending on the timeframe of the project, it may not be possible to wait out abnormally strong winds or unfavorable weather, which will necessitate the installation of more sturdy equipment.

Certain heavy-duty drones are able to withstand strong winds and may be equipped with protective gear that protects the devices from precipitation and dust. Because dust can get into motors, rotors, and the cooling fins of air-cooled drones, this form of equipment can be very helpful for projects that take place in environments where dust may be a significant problem, such as building sites. Dust can cause damage very quickly, putting the drone out of

action for an extended period of time and leading to expensive repairs. Additionally, dust can hinder visibility and lower the overall quality of airborne photos.

#### ☐ **transportation of drones and other equipment**

Batteries are cumbersome. Therefore, most drones are merely outfitted with a power supply that is sufficient to enable them to remain airborne. Even the most sophisticated drones designed specifically for business users can only stay in the air for about an hour before they need to be refueled. Because of this, it is not possible to fly a drone to the location of a project, map the area, and then fly the drone back home. Instead, you will be responsible for bringing the drone to the location on your own and bringing it back after the mapping is finished.

This may not be an issue for drones that are on the smaller side. When the project site is within driving distance, it is frequently able to transfer the drone in a car of a size between a compact and a midsize. The difficulty of transporting the drone, on the other hand, grows proportionally with both its size and the distance it must travel to reach its destination.

#### ☐ **the terrain of the site, as well as the accessibility**

When working on projects that demand high levels of global accuracy, cartographers frequently make use of ground control points in the form of marked targets. These targets supply the mapping program with additional data. These control points are typically required in order for the program to appropriately position the finished map in relation to its surroundings in the manner that is intended.

It can be a significant obstacle if you are unable to position these control points correctly. Some of the project sites are difficult to get to and difficult

to move around in. It may be difficult or even impossible to stage control points as necessary due to factors such as extreme climbing, dense foliage, marshy or unstable terrain, and water. When getting to the location is difficult, it could be more difficult to maintain the drone from the ground once you're there.

#### ☐ **difficulties in both the takeoff and the landing**

The selection of the drone, while it might solve some problems, might also bring up more issues.

Drones that rely on rotors for lift have a substantially smaller landing and takeoff footprint than those that have fixed wings. It may be difficult or even impossible to utilize a fixed-wing drone to map a certain site if there is a restricted amount of space available or if there is poor terrain that would make it risky to take off or land the drone.

It doesn't matter what kind of drone you employ for a mapping assignment; the geography of the site can provide difficulties during takeoff and landing. Landings that are too hard, for example, might cause damage to any drone, especially if the terrain is uneven or rocky. The presence of thick vegetation and tree cover might also make it challenging or impossible to take off from a certain location, which requires a drone pilot to search for an open space they can use instead.



# **CHAPTER TEN**

## **How to Prepare A Cram Sheet**

You will need to review a vast amount of material in order to pass the knowledge test. You will inevitably forget some of the information you've read about, so you'll need to refer back to it occasionally. If you rely on lengthy reading materials or video lessons, this could be an issue.

Making notes as you go through the classes and compiling them on a "cram sheet" is a wise method. This should simply be a few pages long and should only serve to summarize the most significant idea you have learned.

When you enroll in the Part 107 training course, The Pilot Institute provides an 11-page cheat sheet. This is a good model on which to base your study guide. Writing down your own notes is still a good idea because it has been shown to be an effective approach to retaining information. In addition to forcing you to organize all the information as you write it down, this will also aid in organizing the information in your memory.

Finally, as its name suggests, a cram sheet can be a helpful aid for studying. In the hours before your exam, do a little last-minute studying. A cram sheet will be really helpful at this point.

## **How to Get The Right Reference Materials**

To successfully pass the FAA Part 107 exam, you'll need to have a strong understanding of the material covered in the exam. The best way to ensure that you're fully prepared is to use high-quality reference materials when

studying. Here are three tips for choosing references that will help you ace the test:

- **Use Official FAA Materials**

When it comes to studying for any aviation-related exam, it's always best to use official study materials from the Federal Aviation Administration (FAA). The agency publishes a variety of helpful resources, including sample questions and study guides. These materials are designed specifically for those taking the Part 107 exam, so they're an excellent place to start your studies.

- **Look for Recent Publications**

In addition to using official FAA resources, be sure to seek out other references that have been published recently. This is important because regulations and procedures can change over time, so you'll want to make sure your information is up-to-date. A good way to find recent publications is by searching online or visiting your local library's aviation section.

Get Recommendations from Experienced Pilots. If you know any experienced pilots, they can be a great source of recommendations for good reference materials. Ask them what sources they used when preparing for their own exams and see if they have any suggestions specifically tailored.

## **Key Areas You Should Prioritize**



Working shrewdly is always preferable to working hard. When it comes to the Part 107 knowledge test, some topics frequently receive a greater emphasis in terms of the number of questions asked than others. This implies that when planning, you might wish to give certain regions the appropriate priority.

- ☐ A third to half of the questions on the knowledge test, in the opinion of those who have taken it, are related to aircraft operations. These cover, among other things, the particular limitations outlined in the Part 107 regulations, the various categories of airspace, and readings sectional charts.
- ☐ Weather, analyzing METAR and TAF data, how weather impacts flight operations, radio communication standards, and aircraft maintenance are additional subjects to which sufficient study time should be devoted.

- While spending the majority of your study time on the aforementioned areas should cover more than half of the questions on your knowledge test, this does not imply that you can ignore other study topics.

## **Drone for Mapping**

One of the most valuable services that drones may do for many different societies is mapping and surveying. The use of drones has freed surveyors from the tedium of spending days walking around the region to be surveyed.

The process of drone mapping begins with the collection of a large number of aerial photographs, which are then "stitched" together digitally using application software designed specifically for mapping purposes. Drone mapping's ultimate goal is to provide composite images that are more comprehensive and precise than ever before.

In general, the purpose of drone mapping is to assess the current condition of the area, region, or area as part of the process of obtaining information.

After that, a team of specialists or stakeholders, such as civil engineers, agricultural experts, forestry experts, or architects, uses the data and information that was obtained via drone mapping.

The job involved in mapping or surveying can be more easily managed with the assistance of drones, and the resulting information, data, and models are of a higher quality. In addition, drones provide a method of mapping that is not only simple but also quick and inexpensive.

When it comes to mapping, you'll need a drone that's quite different from the kind that's used to fulfill regular commercial criteria. The production of high-



quality captures and an efficient mapping procedure are both desired outcomes of this endeavor.

## **Types of Drones Used For Mapping**

### ☐ **Drone with a Fixed Wing**

A drone with a fixed-wing model is referred to as a Fixed Wing Drone. This drone is unable to hold its position in one place since, similar to an airplane, the wings are fixed in place. Drones with fixed wings must always be in motion.

For this reason, operations involving this sort of drone, such as mapping, can be rather challenging. As a result, a remotely piloted aircraft system that is capable of vertical takeoff and landing was developed and dubbed the RPAS VTOL drone. This particular sort of drone possesses the capabilities of a multi-rotor drone.

### ☐ **Multi-Rotor Drone**

According to commercial standards, the most popular types of drones are those with several rotors. When mapping is involved, a quadcopter or hex copter is often the type of drone that is used.

In order to maintain flight, multi-rotor drones require a significant amount of power. As a result, drones with many rotors are less effective for use in mapping applications.

Recording aerial perspectives typically require the use of multi-rotor drones. When it comes to mapping tasks that take more than half an hour, multirotor

drones will have a difficult time keeping up.

#### □ **Drone with a Single Rotor**

If the drone with fixed wings is analogous to an airplane, then the drone with a single rotor is analogous to a helicopter. Even for flying, single-rotor drones glide like helicopters. To be able to control a type of drone with a single rotor, pilots need to go through specialized training.

The ability to lift hefty weights is typically the primary benefit offered by drones with a single rotor. Drones with a single rotor can cover greater distances in less time than those with multiple rotors.

When used for mapping purposes, drones of this type have the ability to fly for very long periods of time at a single spot. Therefore, it is ideal for carrying out a great deal of shooting from a single vantage point.



## CONCLUSION

The Federal Aviation Administration's (FAA) PART 107 study guide provides an overview of the knowledge and skills required to obtain a commercial drone license. This study guide covers topics such as airspace classification, weather, aeronautical decision-making, and flight operations. The conclusion of the FAA PART 107 study guide highlights the importance of safety when operating a drone. It offers tips on how to avoid common mistakes.

The Federal Aviation Administration (FAA) has released its Part 107 study guide for the 2022-2023 academic year. The guide provides an overview of the regulatory requirements for operating drones in the United States. It includes a section on the conclusion of the FAA PART 107 study guide.

Some key points from the study guide include:

Drones must be operated in accordance with all applicable laws and regulations, including those set forth in Part 107. Operators must obtain a remote pilot certificate from the FAA if they wish to operate a drone commercially. Drones must be registered with the FAA prior to operation. All operators are responsible for ensuring that their drones are safe and do not pose a hazard to other aircraft or people on the ground.

Operating a drone requires knowledge of both federal regulations and local laws. Pilots must also be aware of their surroundings at all times and know how to navigate safely around obstacles. By following these guidelines, pilots can ensure that they are operating their drones in a safe and responsible manner.

