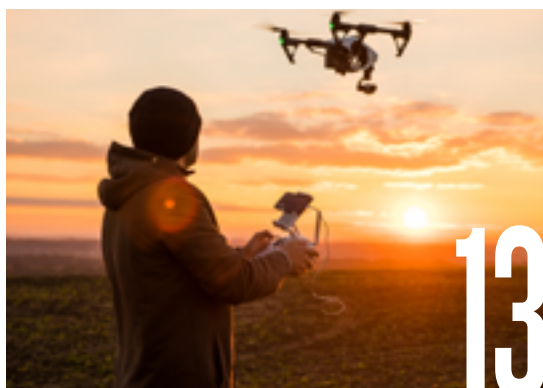


GENERAL AVIATION EXPLAINED

The Backbone of America's Aviation System

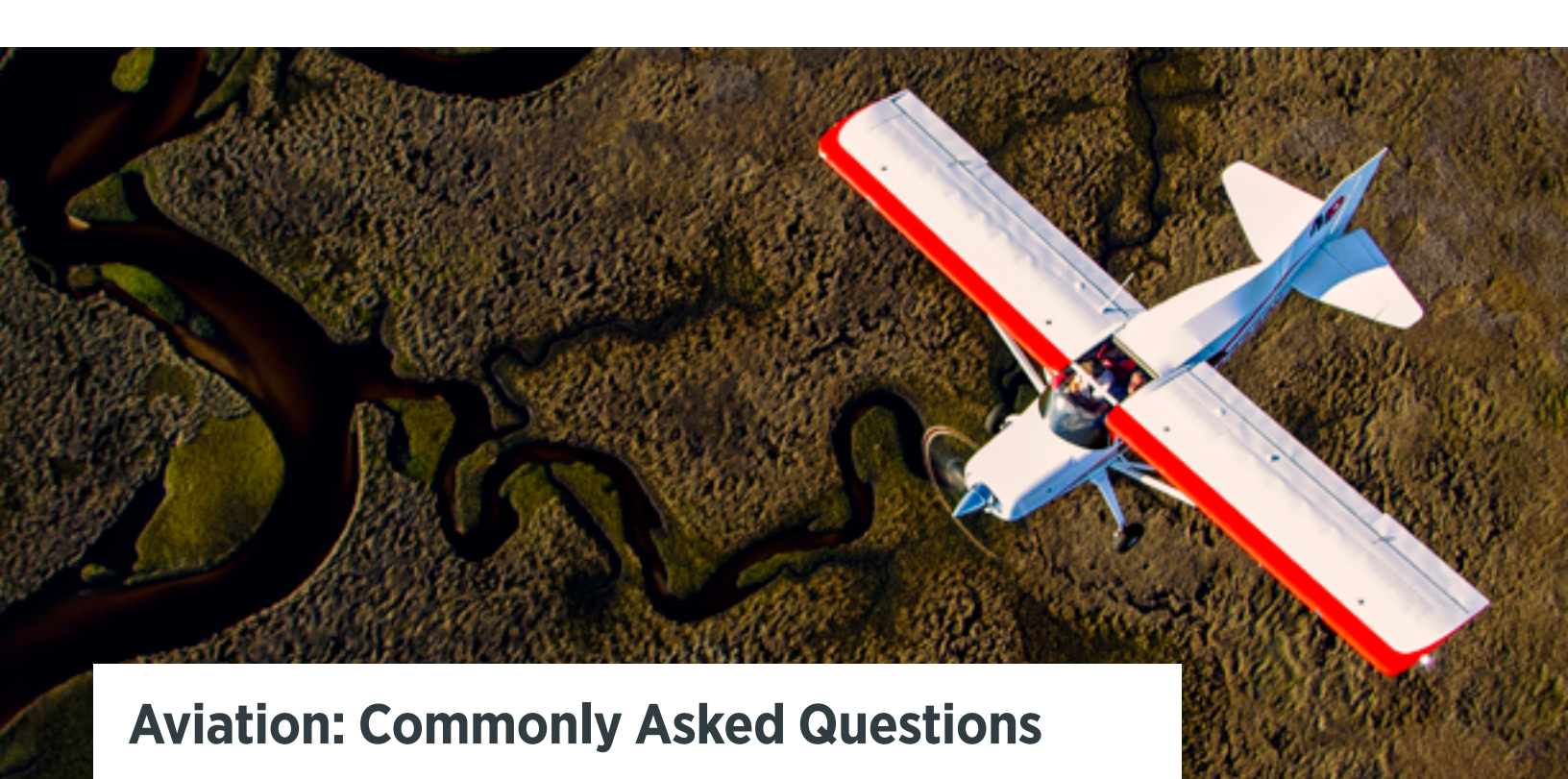




GENERAL AVIATION EXPLAINED

General aviation is not a commonly used term outside of the pilot community, yet it encompasses the most diverse flying activities in the United States. In fact, more than 90% of civil aircraft registered in the United States are general aviation aircraft. And, more than 80% of pilots certificated in the U.S. fly general aviation aircraft. General aviation generates more than \$247 billion in economic activity annually and supports 1.2 million jobs.

To better understand general aviation, we answer commonly asked questions; explain drones and unmanned aircraft systems; and, decode the alphabet soup of aviation terms and definitions.



Aviation: Commonly Asked Questions

WHAT IS GENERAL AVIATION (GA)?

General aviation (GA) is defined by the International Civil Aviation Organization as “all civil aviation operations other than scheduled air services and nonscheduled air transport operations for remuneration or hire.” This means that while military and airline operations do not fall under the umbrella of GA, a wide variety of other types of aerial work—such as aerial flight training, firefighting, banner towing, pipeline patrols, and medevac operations—do fall under this heading. Also, all recreational flying is considered GA.

WHAT IS BUSINESS AVIATION?

Any use of general aviation aircraft for a business purpose.

WHAT ARE THE DIFFERENT TYPES OF CERTIFICATES A PILOT CAN EARN?

Several types of pilot certificates are issued by the Federal Aviation Administration (FAA), with each type defining the privileges that a pilot is able to exercise. Types of certificates pilots can hold include student, sport, recreational, private, commercial, flight instructor, and airline transport pilot (ATP). Every certificate beyond the student pilot certificate requires pilots to pass both a written exam and a practical exam, which takes the form of a flight with an FAA representative.

During their initial flight training, all pilots must hold student pilot certificates. The initial certificate that a pilot will earn (following their student certificate) will be a sport pilot, recreational pilot, or private pilot certificate. The difference between these certificates includes the requirements necessary to obtain them and the specific privileges that they afford a pilot in terms of aircraft that can be flown, the number of passengers that can be carried, the distance that can be flown from a pilot’s home airport, and the conditions in which a pilot is able to fly. Of the three types of initial certificates, the private pilot certificate has the fewest limitations. For quick comparison between the sport, recreational, and private pilot ratings, the following **table** is helpful:

<https://www.aopa.org/advocacy/advocacy-briefs/quick-comparison-of-pilot-certificates>

Beyond earning their initial certificate, some pilots decide to pursue more advanced certificates, such as a commercial pilot certificate, flight instructor certificate, or ATP certificate. A commercial pilot certificate allows pilots to fly for compensation, and a flight instructor certificate allows a pilot to work as a flight instructor. The ATP is the most advanced certificate a pilot can obtain, and it is necessary for anyone who wants to fly for the airlines.

WHAT IS A FLIGHT INSTRUCTOR?

A flight instructor teaches others how to operate an aircraft. To act as a certified flight instructor (CFI), a pilot must hold a flight instructor certificate. Becoming a flight instructor involves learning about instructional design and learning theory, in addition to advanced aviation topics. Unlike the other types of pilot certificates issued in the United States, flight instructor certificates expire if they are not renewed every two years.

WHAT IS A RATING?

A rating can be added to a pilot certificate in order to expand a pilot's privileges. Types of ratings include an instrument rating, a multiengine rating (which allows pilots to fly aircraft with more than one engine), and ratings to fly additional types of aircraft (such as seaplanes, helicopters, or gliders).

WHAT IS AN INSTRUMENT RATING?

An instrument rating is a rating that allows a pilot to fly solely by reference to the flight instruments on the control panel of the airplane, and without any reference to the ground outside (called IMC conditions). This type of rating can be added on to a private pilot certificate or a commercial pilot certificate. Many GA pilots earn instrument ratings, and they are a necessity for airline pilots, CFIs, and most commercial pilots. (Note: IFR is the set of rules and regulations you fly under and IMC are the conditions.)

More information on the instrument rating can be found in the following article:

<https://www.aopa.org/training-and-safety/active-pilots/ratings-and-endorsements/instrument-rating>

WHAT IS A PROFESSIONAL PILOT?

A professional pilot is any pilot who makes money flying an aircraft. Some professional pilots are commercial airline pilots, while others engage in types of flying under the umbrella of general aviation. Examples might include firefighting, aerial application (or crop-dusting), aerial photography, piloting business jets, flight instruction, powerline/pipeline patrol, skydiving operations, glider towing, and banner towing.

PILOT CERTIFICATE VS. PILOT LICENSE

While we are all used to needing a driver's license to drive a car, in the world of aviation the document that allows pilots to fly legally is called a pilot certificate, not a pilot license.

CERTIFICATED VS. CERTIFIED

The FAA does not certify pilots. Because pilots are issued a pilot certificate, however, they are described as being certificated.



WHAT IS A STUDENT PILOT?

A student pilot describes a holder of a student pilot certificate, which is issued to pilots in training, and is necessary when the student reaches the point in their training to fly alone in an aircraft (called flying “solo”).

WHAT IS A SPORT PILOT?

A sport pilot certificate can be earned in approximately half the time as a private pilot certificate, though it does come with more limitations. While sport pilots are not limited in the distance that they are able to fly, they are limited in the type of aircraft they are permitted to pilot and the conditions in which they are permitted to fly. Sport pilots are not able to fly aircraft that weigh more than 1,320 pounds (for land planes, 1,430 lbs. for seaplanes) or aircraft that have more than two seats (including the seat occupied by the pilot). Unlike a private pilot, a sport pilot is not permitted to fly at night.

WHAT IS A RECREATIONAL PILOT?

The recreational pilot certificate is by far the least common pilot certificate and has largely been replaced by the sport pilot certificate (though the recreational certificate is still available). While there are fewer requirements necessary to earn a recreational pilot certificate than a private pilot certificate, the restrictions placed on recreational pilots are considerable. Most significantly, recreational pilot certificate holders are required to stay within 50 miles of their home airports unless they receive additional flight instruction. For this reason, the recreational pilot certificate tends to be desirable only for pilots who do not intend to travel significant distances.

WHAT IS A PRIVATE PILOT?

A private pilot is able to fly nearly anywhere in the world, though they are limited both in the type of aircraft that they can fly and the types of services they can perform. Without additional endorsements or ratings, private pilots fly relatively light aircraft (less than 12,500 pounds) in good weather conditions. Private pilots may not profit from any flight or advertise their services, though they may occasionally share the cost of a flight with their passengers. Reasons for obtaining a private pilot certificate are typically to fly for recreation or to utilize aircraft as a mode of personal transportation.

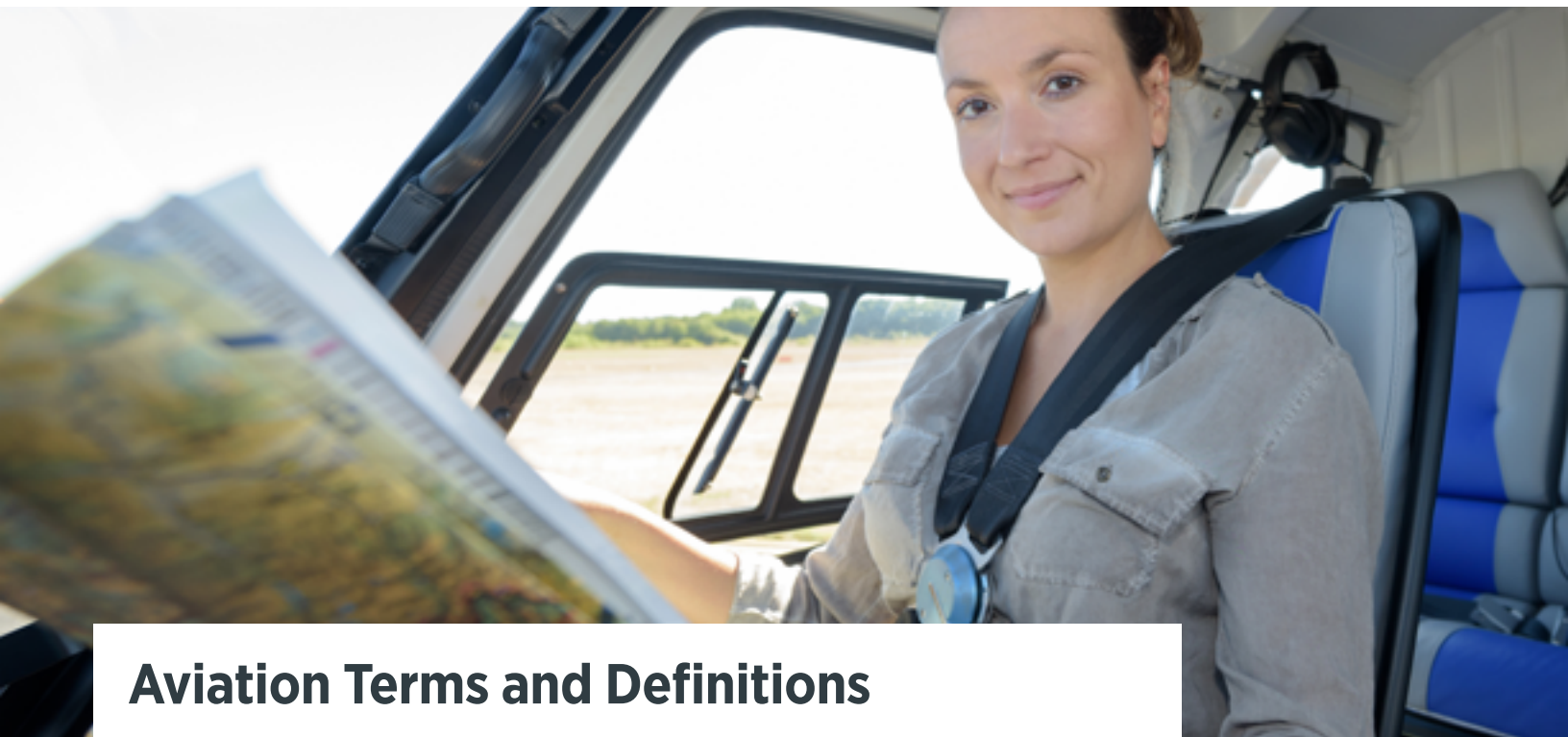
WHAT IS A COMMERCIAL PILOT?

A commercial pilot describes any pilot who has earned a commercial pilot certificate (whether or not that pilot is working for hire). The commercial pilot certificate permits its holder to act as the pilot of an aircraft and be paid for their work. Becoming a commercial pilot means learning how to fly aircraft that are more complex than those flown by many private pilots. Commercial pilot training also demands more precision and knowledge about professional flight operations.

HOW DOES ONE BECOME AN AIRLINE PILOT?

To be an airline pilot, a pilot must earn the airline transport pilot (ATP) certificate, as well as instrument and multiengine ratings (typically). To become eligible for an unrestricted ATP certificate, a pilot must have flown at least 1,500 hours and be at least 23 years old.





Aviation Terms and Definitions

ADS-B

Automatic Dependent Surveillance-Broadcast (ADS-B) broadcasts the aircraft's highly accurate GPS-derived position to air traffic control and other aircraft, providing much more accurate position information than ground-based radar, and is a key technology behind the FAA's Next Generation Air Transportation System. The FAA mandated ADS-B Out for flights after January 1, 2020, in airspace defined by FAR 91.225. ADS-B In, which provides enhanced pilot situational awareness through the display of weather and traffic information in the cockpit, is optional.

AOPA

Since 1939, the Aircraft Owners and Pilots Association has protected the freedom to fly by creating an environment that gives people of all ages the opportunity to enjoy aviation and all it has to offer. With more than 300,000 members, AOPA is the world's largest community of pilots, aircraft owners, and aviation enthusiasts with representatives based in Frederick, Md., Washington, D.C., and seven regions across the United States. The association provides member services including advocacy at the federal, state, and local levels, legal services, flight training and safety programs, and award-winning media. AOPA specializes in making aviation more accessible to everyone.

AIRSPACE

Airspace is classified typically into two categories: controlled and uncontrolled. Airspace is then further divided up into different classes based on the requirements to operate there and the complexity of the operations contained within. Only one class of airspace is defined as uncontrolled, with the rest being controlled. Each class of airspace has its own requirements for equipment, communications, cloud clearances, etc.

<https://www.aopa.org/-/media/Files/AOPA/Home/Pilot-Resources/ASI/Safety-Advisors/sa02.pdf>

BASICMED

An alternative to recurrent third-class medical certification. Implemented on May 1, 2017. BasicMed is an alternate way for pilots to fly without holding an FAA medical certificate as long as they meet certain requirements, including having passed an FAA medical exam at some point in the past. They simply print a Medical Examination Checklist and get a physical exam with a state-licensed physician. They then complete an online medical course, submit information to the FAA, and they're ready to fly.

EAA

The Experimental Aircraft Association was founded in 1953 by a group of individuals in Milwaukee, Wisc., who were interested in building their own airplanes. EAA expanded its mission of growing participation in aviation to include antiques, classics, warbirds, aerobatic aircraft, ultralights, helicopters, and contemporary manufactured aircraft. It has grown from a handful of aviation enthusiasts to an international organization representing virtually the entire spectrum of recreational aviation.

EVTOL

Electric vertical takeoff and landing vehicles encompass great diversity in their sizes, seating configurations, useful loads, performance envelopes, and propulsion schemes. Some use pure electric sources of power, and some have hybrid internal combustion-electric powerplant combinations. eVTOL holds great promise for urban mobility and the prospect of alleviating ground traffic problems.

EXPERIMENTAL AIRCRAFT

The term “experimental” is used to identify a group of aircraft issued an experimental airworthiness certificate for several reasons. A few of those reasons are research and development, exhibition, air racing, and being amateur-built.

FBO

A fixed-base operator is a company that is given permission by an airport to operate on its premises to provide aeronautical services for aircraft, passengers, and crew (they may also be run by the owner of the airfield). Generally, FBOs are the main providers of services in general aviation, or for private and recreational flying.

Airports that receive federal tax dollars from the Airport Improvement Program are bound by grant assurances, which dictate that airports and FBO fees must be reasonable and non-discriminatory.

[AOPA Airport Directory](#)



IFR

Instrument flight rules and regulations established by the FAA to govern flight under conditions in which flight by outside visual reference is not safe and flying the aircraft by reference to aircraft instruments is necessary.

While IFR provides efficiency, additional safety, and usually consistent contact with air traffic control, it requires that pilots follow an exact pre-determined/pre-planned flight route. Deviations are allowed in instances of emergencies, diversions, and traffic and weather avoidance, but generally air traffic control expects you to fly the route and altitude you were given, called a clearance.

IMC

Instrument meteorological conditions are conditions expressed in terms of visibility, distance from cloud, and ceiling less than the minima specified for visual meteorological conditions (VMC). The pilot uses instruments rather than the outside visual references used under visual flight rules (VFR). Typically, this means the pilot can fly in cloudy or bad weather. (also see VMC)

MULTIENGINE AIRPLANE

An airplane with more than one engine. Typical configuration will have one engine per side, mounted to the wing or fuselage. On lighter aircraft (under 12,500 lbs.) the engine will be reciprocating or a turbo-prop engine, working in combination with a propeller to produce thrust. In larger aircraft the engines will typically be a turbofan/turbojet, which do not utilize a propeller, and there may be more than two engines.



N NUMBER

According to the FAA, “An identifier unique to each aircraft. The letter prefix designates the country where the aircraft is registered. The United States is “N,” which is why this number is commonly called the “N-number.” The rest of the number is the aircraft’s individual registration number, for example, N1234, or a combination of numbers and letter suffixes.

<http://aircraft-registration-country-codes.blogspot.com/>

NATCA

The National Air Traffic Controllers Association is a labor union and aviation safety organization in the United States that represents nearly 20,000 air traffic controllers, engineers, and other aviation safety-related professionals. NATCA was certified in 1987 by the Federal Labor Relations Authority to be the exclusive bargaining representative for air traffic controllers employed by the Federal Aviation Administration.

natca.org

NBAA

The National Business Aviation Association was founded in 1947 and is based in Washington, D.C. NBAA is the leading organization for companies that rely on general aviation to help make their businesses more efficient, productive, and successful. The association represents more than 11,000 companies and professionals.

nbaa.org

NOTAM

According to the FAA, “A Notice To Airmen or NOTAM is a notice containing information (not known sufficiently in advance to publicize by other means) concerning the establishment, condition, or change in any component (facility, service, or procedure of, or hazard in the National Airspace System) the timely knowledge of which is essential to personnel concerned with flight operations.”

Also note that NOTAMs can be obtained by pilots in several places including by phone and internet.

PLANES/AIRPLANES

According to the FAA, “Aircraft means a device that is used or intended to be used for flight in the air. Airplane means an engine-driven fixed-wing aircraft heavier than air, that is supported in flight by the dynamic reaction of the air against its wings.”

SFRA

In United States aviation, a special flight rules area (SFRA) is a region in which the normal regulations of flight do not apply in whole or in part, especially regulations concerning [airspace](#) classification, altitude, course, and speed restrictions, and the like.

Some SFRAs include the roughly 30-nautical mile circular area around Washington, D.C, Los Angeles, Hudson Valley, Grand Canyon, and Ketchikan, Ala.

SINGLE-ENGINE AIRPLANE

A generally smaller aircraft (under 12,500 lbs.), powered by one engine that is typically a reciprocating or turbo-prop engine, working in combination with a propeller to produce thrust.

STC

A supplemental type certificate (STC) is a national aviation authority-approved major modification or repair to an existing type certificated aircraft, engine, or propeller. As it adds to the existing type certificate, it is deemed “supplemental.” In the United States, issuance of such certificates is under the purview of the FAA.

SUA/SUAS

Small unmanned aircraft (SUA) means an unmanned aircraft weighing less than 55 pounds on takeoff, including everything that is on board or otherwise attached to the aircraft.

Small unmanned aircraft system (SUAS) means a small unmanned aircraft and its associated elements (including communication links and the components that control the small unmanned aircraft) that are required for the safe and efficient operation of the small unmanned aircraft in the national airspace system.

Another meaning for SUA is Special Use Airspace, which is certain airspace, often controlled by the military, that requires special permission from Air Traffic Control to enter. Possible to add that as a footnote in this section.

UAS/UAV (ALSO COMMONLY REFERRED TO AS DRONE)

Multiple terms are used for unmanned aerial vehicles and unmanned aircraft systems, generally referring to the same concept. The term drone, more widely used by the public, was coined in reference to the early remotely flown target aircraft used for practice firing of a battleship's guns. The term unmanned aircraft system (UAS) was adopted by the U.S. Department of Defense and the FAA in 2005 according to their unmanned aircraft system roadmap 2005-2030. The term UAS emphasizes the importance of elements other than the aircraft. It includes ground control stations, data links, and other support equipment. A UAV is defined as a "powered, aerial vehicle that does not carry a human operator, uses aerodynamic forces to provide vehicle lift, can fly autonomously or be piloted remotely, can be expendable or recoverable, and can carry a lethal or nonlethal payload."



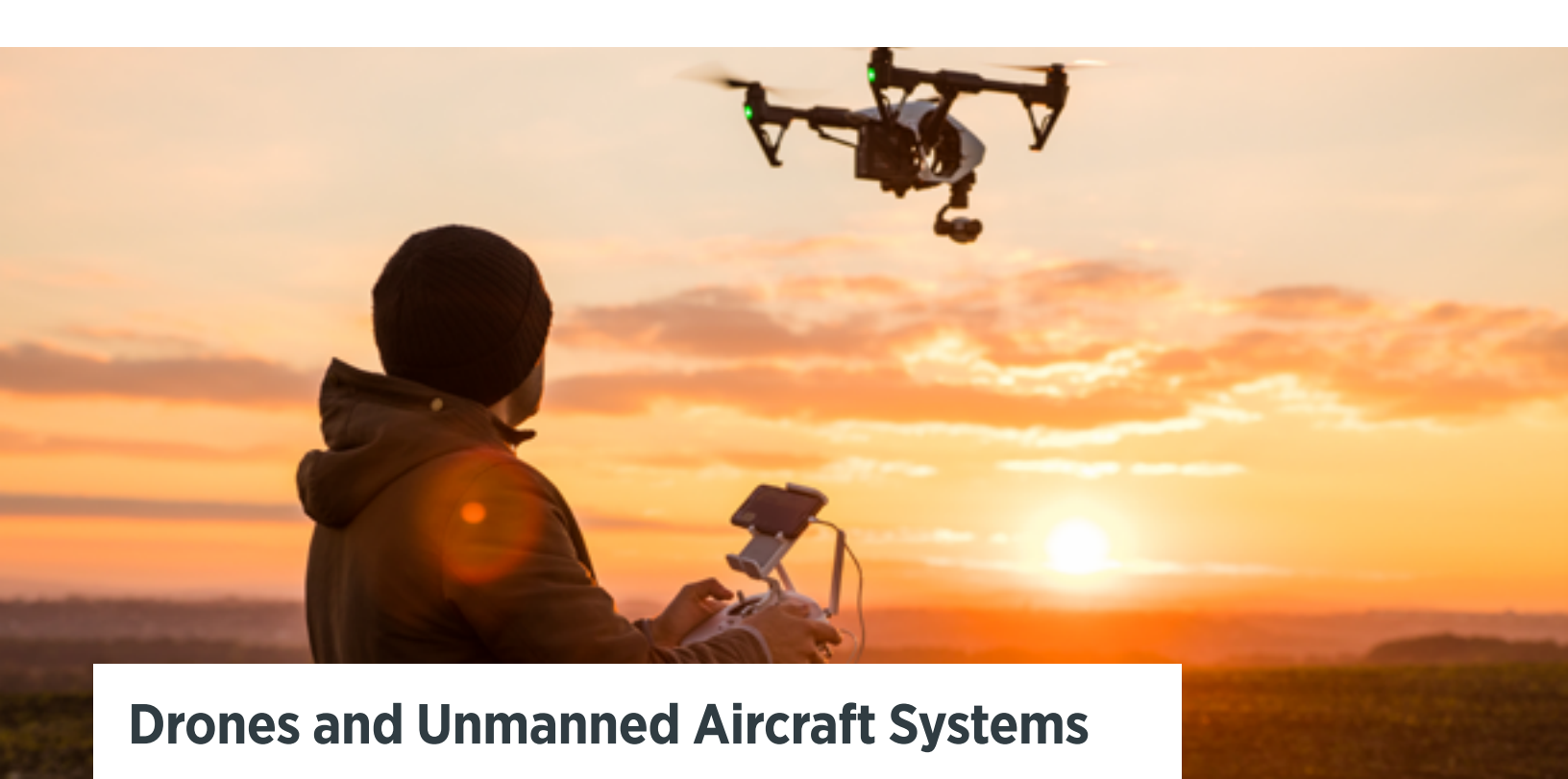
VFR

Visual flight rules (VFR) are a set of regulations under which a pilot operates an aircraft in weather conditions generally clear enough to allow the pilot to see where the aircraft is going. Specifically, the weather must be better than basic VFR weather minima, i.e., in visual meteorological conditions (VMC), as specified in the rules of the relevant aviation authority. The pilot must be able to operate the aircraft with visual reference to the ground, and by visually avoiding obstructions and other aircraft.

VMC

Visual meteorological conditions (VMC) is an aviation flight category in which visual flight rules (VFR) flight is permitted—that is, conditions in which pilots have sufficient visibility to fly the aircraft maintaining visual separation from terrain and other aircraft. They are the opposite of instrument meteorological conditions (IMC). The boundary criteria between IMC and VMC are known as the VMC minima and are defined by: visibility, cloud ceilings (for takeoffs and landings), and cloud clearances.





Drones and Unmanned Aircraft Systems

UNMANNED AIRCRAFT SYSTEMS (UAS)/PART 107 AND REMOTE PILOT CERTIFICATE FOR SMALL UNMANNED AIRCRAFT SYSTEMS (SUAS):

SUAS operators can be broken into a few groups

Recreational Flyers and Modeler Community Based Organizations: operation for recreational purposes only. Still have rules to follow and SUAS need to be registered.

Part 107 of the Federal Aviation Regulations —operations for any other reason other than recreational. Must pass the knowledge test, register their SUAS, and get a Remote Pilot certificate from FAA.

Public Safety and Government users—Police, fire, etc.

Educational Users—Could fall under Part 107, recreational, or institutions of higher learning exception.

More information on each of these groups can be found here; <https://www.faa.gov/uas/>