

University of Connecticut

Operation Manual

Use of Drones/Unmanned Aircraft Systems



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Prepared by UConn's Office of the General Counsel

PREFACE

Unmanned aircraft systems (“UAS”), or drones, are becoming regular features on university campuses. UAS are now used in a variety of activities related to teaching, learning, research, service, and outreach.

This Operation Manual is intended to help UAS users at UConn understand how to safely, responsibly and legally operate UAS. It is essential that UAS are used safely and responsibly at UConn and in accordance with all relevant laws.

UConn faculty, staff and students should review this Operation Manual before using UAS in university-related activities or on university grounds. No one at UConn may operate UAS unless he or she can do so in a safe and responsible manner and in accordance with all relevant laws.

Anyone at UConn with questions about operating UAS may contact the Office of the General Counsel at generalcounsel@uconn.edu or (860) 486-5796.

PART ONE

Overview

What are UAS?

UAS are aircrafts capable of flight without a human pilot on board. The use of UAS by civilians had traditionally been limited to hobbyists flying model airplanes. Recent innovations in technology have greatly expanded the types of UAS available and how they are used. There is now a greater variety of UAS and a wider array of applications for UAS than ever previously existed.

Why are UAS regulated?

UAS can operate in the same airspace as commercial aircrafts, so they are regulated primarily to ensure aviation safety. The Federal Aviation Administration (“FAA”) has established rules for how UAS can operate in that airspace. Many of these rules concern the size and condition of the UAS and where and at what heights UAS may be operated.

What are the rules for using UAS?

It depends. The FAA has established one set of rules for users who “Fly for Fun” and another set of rules for users who “Fly for Work/Business.” Users who “Fly for Fun” are considered “hobbyists.” Rules for hobbyists are less stringent. If you do not qualify as a “hobbyist,” then you are subject to the rules applicable to those who “Fly for Work/Business.” Those rules are more stringent.

The criteria for determining what legal requirements apply to specific uses of UAS by students, faculty and staff are described further below. Appendix A also provides a decision tree that may be helpful to you in determining what set of rules apply to your intended use.

What do I need to know before using UAS?

Any use of UAS by students, faculty or staff as part of a university activity must conform to the Part 107 rules (described in Part Four of this Manual) or the criteria for recreational use (described in Part Three of this Manual). These standards only authorize the use of UAS that weigh less than 55 pounds at takeoff.

If you are a hobbyist, you generally just need to operate your UAS at safe heights and in appropriate locations and maintain a safe distance from people. These rules are described further in Part Three of this Manual.

If you are not a hobbyist, then you are generally subject to similar, but more specific, operational rules as hobbyists. You must also hold a remote pilot airman certificate. These rules are described further in Part Four of this Manual.

PART TWO

Determining What Rules Apply To Your UAS Operation

Do you “Fly for Fun” or “Fly for Business”?

UAS operators must first determine if their use is for Fun or Business. If the use is not for Fun under the FAA standards, then the use is considered to be for Business. A decision tree is provided in Appendix A to assist in evaluating whether a flight is for Fun or for Business.

What does it mean to “Fly for Fun” (recreational use)?

UAS operators who “Fly for Fun” do so “strictly” for hobby or recreational purposes. Flights that are conducted as part of a “pursuit outside one’s regular occupation engaged in especially for relaxation” and for “refreshment of strength and spirits after work; a means of refreshment or diversion” are considered hobby or recreational flights.

Faculty, staff and students generally “Fly for Fun” when operating UAS in their personal activities. These types of flights must satisfy the criteria for model aircraft use set forth in Public Law 112-95, Section 336 – Special Rule for Model Aircraft (the FAA “Section 336” criteria). Those criteria are described in Part Three of this Manual.

What is a hobby or recreational use at UConn?

The nature of your use is generally determined by whether or not you are using UAS as part of your job or in return for compensation. The operation of a UAS for “compensation or hire” is not a recreational use. Any use of UAS for “compensation or hire” is for Business. Your use is also considered to be for Business if it is in furtherance of or incidental to your job or profession.

This applies for student, faculty and staff users. Most faculty and staff uses of UAS at UConn will be at least incidental to the user’s job. For example, the use of UAS for faculty research purposes, even by students on behalf of faculty, constitutes a business activity under current FAA guidance. Conversely, students using UAS in student group activities, like an aviation club, is generally a recreational use.

What about classroom activities?

The FAA issued specific guidance concerning the limited use of UAS by students and faculty in certain classroom activities. UConn students are generally deemed to be operating UAS for recreational purposes when doing so as a component of science, technology and aviation-related educational curricula or other coursework, such as television and film production or the arts.

Students are not using UAS recreationally if they receive any compensation, directly or indirectly, from these activities. For example, UAS cannot be used by students under this guidance to collect media or data for a company that is sponsoring the classroom activities. If there is any compensation for the activities – whether by the students, faculty or UConn – the use will be considered to be for Business.

Students operating UAS in a classroom setting must still do so in a safe and responsible manner. Faculty are permitted – and advised – to provide limited assistance to students operating UAS during classroom activities. This limited involvement by faculty is considered recreational where operation of the UAS is secondary to the design and construction of the aircraft, such that the primary purpose of the course is not operating the UAS. If the course objective is UAS flight instruction itself, the faculty's use is not recreational.

Who may “Fly for Fun”?

Flights for hobby or recreational purposes do not require pilots (*i.e.*, UAS operators) to be certified to operate UAS or have specific aeronautical knowledge. The flights are also subject to less stringent operating standards.

What does it mean to “Fly for Business/Work”?

UAS operators “Fly for Business/Work” if they are using UAS for any purpose other than for hobby or recreational purposes. Faculty, staff and students generally “Fly for Business/Work” when operating UAS as part of their job duties at UConn.

Flights involving the use of UAS that weigh less than 55 pounds at takeoff are generally governed by the rules set forth in 14 C.F.R. Part 107. Those rules, which are referred to as the “small UAS” rules or the “Part 107” rules, are described in Part Four of this Manual.

What if my use is not allowed by the Part 107 Rules?

The Part 107 rules set forth minimum standards for flights conducted as part of a business activity using small UAS. Flights that comply with these standards do not require advance permission from the FAA.

Any use of UAS not permitted under the Part 107 rules requires advance permission from the FAA. UConn is currently only authorized to use UAS in compliance with the Part 107 rules.

UConn can, and may in the future, obtain authorization from the FAA for faculty, staff or students to use UAS in ways not currently permitted by the Part 107 rules. Examples of the types of additional authorizations available and information about who to contact about such authorizations are provided in Part Five of this Manual.

Resources:

[https://www.federalregister.gov/documents/2016/06/28/2016-15079/operation-and-certification-of-small-unmanned-aircraft-systems;](https://www.federalregister.gov/documents/2016/06/28/2016-15079/operation-and-certification-of-small-unmanned-aircraft-systems)

[https://www.faa.gov/uas/getting_started/;](https://www.faa.gov/uas/getting_started/)

[https://www.faa.gov/uas/resources/uas_regulations_policy/media/interpretation-educational-use-of-uas.pdf;](https://www.faa.gov/uas/resources/uas_regulations_policy/media/interpretation-educational-use-of-uas.pdf)

<http://knowbeforeyoufly.org/education-use/>

PART THREE

Recreational/Educational Use Guidelines

To operate your UAS for recreational or educational purposes, you must comply with either:

- (a) The criteria for recreational use of model aircraft set forth in Section 336 and summarized in this Part Three of this Manual; OR
- (b) The Part 107 rules, which are summarized in Part Four of this Manual.

If your intended use exceeds the criteria in Section 336 and the rules in Part 107, additional FAA authorization is required. You must familiarize yourself with and comply with all relevant laws.

Aircraft Requirements
Your UAS must weigh 55 pounds or less (including all items on board or attached to the aircraft)
Your UAS should be registered with the FAA at https://registermyuas.faa.gov/ if it weighs more than 0.55 pounds. You must be 13 years of age or older and must be a U.S. citizen or legal permanent resident to register your UAS with the FAA.
You should label your UAS with the FAA-provided registration number
Your UAS must be capable of sustained flight in the atmosphere
Operational / Safety Requirements
Fly at or below 400 feet
Keep UAS within sight
Never fly near other aircrafts, especially near airports
Never fly over or near people
Never fly over stadiums or sports events
Never fly near emergency response efforts such as fires
Never fly under the influence of any intoxicant
Be aware of airspace requirements
Never interfere with and always yield right of way to manned aircraft
Follow safety guidelines set forth by the Academy of Model Aeronautics (AMA). For more information see http://UAS.modelaircraft.org/ama/images/UAS_Safety_Program_web.pdf .
Additional prohibitions: <ul style="list-style-type: none">• No careless or reckless operations• No dropping of objects that creates a hazard• No carriage of hazardous materials
Location Requirements
Remain at least 5 miles from airports unless you provide prior notification to airport and air traffic control. For more information see http://knowbeforeyoufly.org/air-space-map/ .
Comply with all airspace restrictions, including temporary flight restrictions and restricted or special use airspace. For more information see https://www.faa.gov/uas/where_to_fly/airspace_restrictions/ and http://knowbeforeyoufly.org/air-space-map/ .
Resource

FAA special rule for model aircraft, Public Law 112-95, Section 336

(https://www.faa.gov/uas/media/Sec_331_336_UAS.pdf;

https://www.faa.gov/uas/media/model_aircraft_spec_rule.pdf)

FAA U.S. Air Space Map (<http://knowbeforeyoufly.org/air-space-map/>)

AMA Flight Safety Guide (http://suas.modelaircraft.org/ama/images/sUAS_Safety_Program_web.pdf)

PART FOUR

Business Use Guidelines

To operate your UAS for business purposes, you must comply with the Part 107 rules, which are summarized below. If your intended business use exceeds the limitations of Part 107, additional FAA authorization is required. You must familiarize yourself with and comply with all relevant laws.

Aircraft Requirements
Your UAS must weigh less than 55 pounds (including all items on board or attached to the aircraft)
Your UAS must be registered with the FAA at https://registermyuas.faa.gov/ if it weighs more than 0.55 pounds. You must be 13 years of age or older and must be a U.S. citizen or legal permanent resident to register your UAS with the FAA.
You must label your UAS with the FAA-provided registration number
Your UAS must be capable of sustained flight and in a condition for safe operation
Pilot Requirements
Pilots must be at least 16 years of age and hold a remote pilot airman certificate with a UAS rating or be under the direct supervision of a person who does. The remote pilot in command must be able to immediately direct control of the UAS if he or she is supervising the operation of the UAS. See https://www.faa.gov/uas/getting_started/fly_for_work_business/becoming_a_pilot/ .
The remote pilot must ensure that he or she, the person manipulating the controls, and visual observer are able to safely carry out their responsibilities. The remote pilot must ensure the UAS poses no undue hazard to people, aircrafts, or property if there is a loss of control of the UAS.
No one may serve as a remote pilot, person manipulating the controls, visual observer, or other crewmember if he or she: <ul style="list-style-type: none">• Has consumed any alcoholic beverage within the preceding 8 hours;• Is under the influence of alcohol;• Has a blood alcohol concentration of .04 percent or greater;• Is using a drug that affects the person's mental or physical capabilities (which may include over-the-counter medications); OR• Has any other medical condition that creates a risk to operations (e.g., epilepsy).
Operational / Safety Requirements
Do not fly faster than a groundspeed of 87 knots (100 miles per hour)
Fly at a maximum altitude of 400 feet above ground level (AGL) or, if higher than 400 feet AGL, remain within 400 feet of a structure
Do not fly if minimum weather visibility is less than 3 miles from control station
Stay 500 feet below clouds and no less than 2000 feet horizontally from the clouds
Maintain visual line-of-sight (VLOS) over the UAS that is unaided by other devices. The UAS must remain within VLOS of the remote pilot in command and the person manipulating the flight controls of the UAS. Alternatively, the UAS must remain within VLOS of the visual observer.
Do not operate UAS over any persons unless they: <ul style="list-style-type: none">• Are directly participating in the operation; OR• Are under a safe cover, such as a protective structure or a stationary vehicle.
No operation at night. UAS operations during civil twilight is permitted with appropriate anti-collision lighting. Civil twilight is 30 minutes before official sunrise and 30 minutes after official sunset.

<p>Perform safety risk assessment and pre-flight check to (at a minimum):</p> <ul style="list-style-type: none"> • Confirm that the UAS is in a condition for safe operation; • Conduct an assessment of the operating environment (local weather conditions, local airspace and any flight restrictions, location of persons and property on the surface, and other ground hazards); • Ensure that all persons directly participating in the UAS operation are informed about operating conditions, emergency procedures, contingency procedures, roles and responsibilities of each person involved in the operation, and potential hazards; • Ensure that all control links between the control station and the UAS are working properly; • Ensure there is sufficient power to continue controlled flight operations to a normal landing; • Ensure that any object attached or carried by the UAS is secure and does not adversely affect the flight characteristics or controllability of the aircraft; and • Ensure that all necessary documentation is available for inspection, including the remote pilot certificate and aircraft registration.
<p>Autonomous operations are permitted if the remote pilot in command retains the ability to direct the UAS to ensure compliance with the requirements of Part 107.</p>
<p>Always remain clear of and yield right of way to manned aircraft.</p>
<p>Additional prohibitions:</p> <ul style="list-style-type: none"> • No person may act as a remote pilot in command or visual observer for more than one unmanned aircraft operation at one time • No operations from a moving aircraft • No operations from a moving vehicle unless the operation is over a sparsely populated area • No careless or reckless operations • No dropping of objects that creates a hazard • No carriage of hazardous materials
<p>Location Requirements</p>
<p>Operations in Class B, C, D and E airspace <u>require</u> air traffic control permission. For more information see https://www.faasafety.gov/gslac/ALC/course_content.aspx?cID=42&sID=505&preview=true; and https://www.faa.gov/uas/where_to_fly/airspace_restrictions/.</p>
<p>Operations in Class G airspace <u>do not require</u> air traffic control permission. For more information see https://www.faasafety.gov/gslac/ALC/course_content.aspx?cID=42&sID=505&preview=true; and https://www.faa.gov/uas/where_to_fly/airspace_restrictions/.</p>
<p>Download B4UFLY app at https://www.faa.gov/uas/where_to_fly/b4ufly/ to determine whether there are any restrictions or requirements in effect at the location where you want to fly.</p>
<p>Check for NOTAM temporary flight restrictions before flying: https://pilotweb.nas.faa.gov/PilotWeb/</p>
<p>Reporting Requirements</p>
<p>You must report to the FAA within 10 days of any flight that results in:</p> <ul style="list-style-type: none"> • Serious injury or loss of consciousness; OR • Property damage greater than \$500. <p>See Part 107 for reporting details. Certain accidents must also be reported to the NTSB.</p>
<p>Resources</p>
<p>FAA UAS rule, 14 C.F.R. Part 107. See https://www.faa.gov/uas/media/Part_107_Summary.pdf; https://www.faa.gov/uas/media/AC_107-2_AFS-1_Signed.pdf.</p>

PART FIVE

Operations Outside the Scope of FAA Section 336 and Part 107

If your intended use does not meet the criteria of Section 336 and exceeds the limitations of Part 107, additional FAA authorization is required. Examples of the types of additional authorizations available are described below. Contact the Office of the General Counsel at generalcounsel@uconn.edu or (860) 486-5796 for more information about seeking such authorization.

Certificate of Authorization:

UConn may be able to obtain a certificate of authorization (“COA”) to exceed certain limitations of Part 107. A COA will allow your UAS operation to deviate from Part 107 if the FAA finds that the proposed operation can be safely conducted under the terms of a COA.

The following are examples of the limitations of Part 107 that may be waivable through a COA:

- Operation from a moving vehicle or aircraft. However, no waiver of this provision will be issued to allow the carriage of property of another by aircraft for compensation or hire.
- Daylight operation
- Visual line of sight aircraft operation. However, no waiver of this provision will be issued to allow the carriage of property of another by aircraft for compensation or hire.
- Visual observer
- Operation of multiple small unmanned aircraft systems
- Yielding the right of way
- Operation over people

Public Uses:

UAS owned by the State of Connecticut (or contracted for use by the State of Connecticut) and operated for governmental purposes may be operated under the FAA Part 107 requirements. Such operations may also be conducted as a public use, which is not subject to certain FAA regulations. To operate under the public use rules, a blanket public COA from the FAA is required.

Resources:

https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_00-1_1A.pdf;

https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/systemops/aaim/organizations/uas/coa/;

<http://knowbeforeyoufly.org/for-public-entities/>

APPENDIX A

RECREATIONAL / BUSINESS USE DECISION TREE

Follow the decision tree below to determine if your use is a recreational use or a business use.

