Drones

For months the conversation was about 333 operations and the time delay getting the licenses. Except in rare cases, that has gone by the wayside with Part 107 certificates. They are not terribly difficult to get; some study and testing is required. See https://inlocc.webhost.iu.edu/policies/drones.cfm? for details.

Hobbyists

By our definition (and, we believe, supported by FAA regulations) flying a drone for university operations *is not* hobbyist flying. There is a lack of hobbyist training requirements and we are unable to determine the skill level, maturity and responsibility of people who are hobbyists, therefore, because of safety and privacy concerns, the only area where drones can be flown from IU campus property is at IUB between Campus View and Tulip Tree.

No hobbyist is allowed to fly from any IU property without permission. Hobbyists can apply for permission at https://inlocc.webhost.iu.edu/CAS/UAS/first/index.cfm. Insurance coverage for the hobbyist is *required* for flying from IU property and we recommend you have coverage for flying anywhere. Don't assume you have coverage under your homeowners policy. You probably don't. Google "hobbyists drones insurance" and "hobbyists drones associations" for information. Insurance may be a benefit of membership in some associations.

Commercial Operators

In general, we don't allow any commercial drone operations from IU property unless they are contracted by IU.[1]

1. The department requesting drone operations must request the wing number, a jpeg image of the drone to be used, a copy of the pilot's Part 107 certificate *or* the company's 333 approval, and a certificate of insurance showing the required coverage (see II.11. at https://inlocc.webhost.iu.edu/policies/Drones_NotIU.cfm)
2. The department requesting drone operations must go to https://inlocc.webhost.iu.edu/CAS/UAS/first/index.cfm, choose "University Users" and complete the application. Forward the information from the vendor (except the wing number; you enter that in the application) to stephenl@iu.edu
3. The drones approval committee will review the application. You may receive messages from committee members. You will be notified of the decision. We try for a quick turnaround but it's wise to give us a two-weeks window.
4. We are working on a list of approved vendors to simplify this. This document will be edited when that is available.

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[1] Contact Eric Rudd ericrudd@indiana.edu about hiring University resources for your drone needs.

<u>IU Operators</u>

Anyone operating a drone as an IU employee is an IU operator.

1. The drone must be purchased through Procurement Services. We are working with some people who acquired their drone in other ways, but this makes the process much harder.
2. Conact INLOCC to obtain the FAA wing number. We can do this in a matter of minutes.
3. The pilot must have a Part 107 certificate[2] (https://inlocc.webhost.iu.edu/policies/Drones.cfm). Mail a copy of their temporary certificate or their permanent certificate to stephenl@iu.edu. These certificate have expiration dates. They must have a valid (and not expired) certificate on file with INLOCC to fly.
4. Complete the application.
    a. As you describe your operations, do so fairly but broadly. Your use will be constrained by what you describe. E.g., if you are using the drone to take pictures of building roofs (a Facilities Services operation) it would be wise to include all campuses in your request *unless* you are certain you will always be limited to one campus.
    b. Answer the questions completely. Most applications to date have required more input in the images area.
5. When your request is approved and INLOCC has received pilot documentation, INLOCC (kudavis@iu.edu) will arrange your insurance coverage. We will need to know what account to charge for insurance.

Any approval for use may be revoked for cause. This includes expired licenses/certificates.

<u>Pilot ID Cards</u>
Pilots will be issued an ID card from INLOCC. You should carry it with you when flying. This is your proof of approval if questioned by a university official.

<u>Daily Flight Log</u>
Anytime an IU pilot flies the drone *or* a hobbyist or commercial operator flies over IU property, they must complete the daily flight log at https://inlocc.webhost.iu.edu/CAS/UAS/DailyFlightLog.cfm. There is a connection button are on the INLOCC home page (https://inlocc.iu.edu/) Applications tab to simplify reaching the page.

<u>Classes of Airspace</u>

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[2] We are ignoring flight under a 333 exception and an FAA COA because we believe all flights will be by Part 107 pilots.

Before you fly you **MUST** be cognizant of the airspace you will be flying in and the restrictions, if any, in that space.

An unofficial review can be found at https://en.wikipedia.org/wiki/Airspace_class_(United_States). This is a good page to read because the amount of information is extensive. You should also review https://www.faasafety.gov/gslac/ALC/course_content.aspx?cID=42&sID=505&preview=true. This is a training page but it's an FAA page.

It is incumbent upon the PIC (pilot in command) to know what kind of airspace he or she is about to fly in and whether they need a waiver. **IU does not provide indemnification or insurance if you are fined for violations of FAA regulations.**
See https://skyvector.com/ or http://vfrmap.com/ for online charts (see legend below). Waivers can be requested at https://www.faa.gov/uas/request_waiver/.

A waiver will be required at:
IUB (Class E airspace)
IUPUI (no; Class G airspace)
IUSB (no; Class G airspace)
IUN (no; Class G airspace)
IUK (no; Class G airspace)
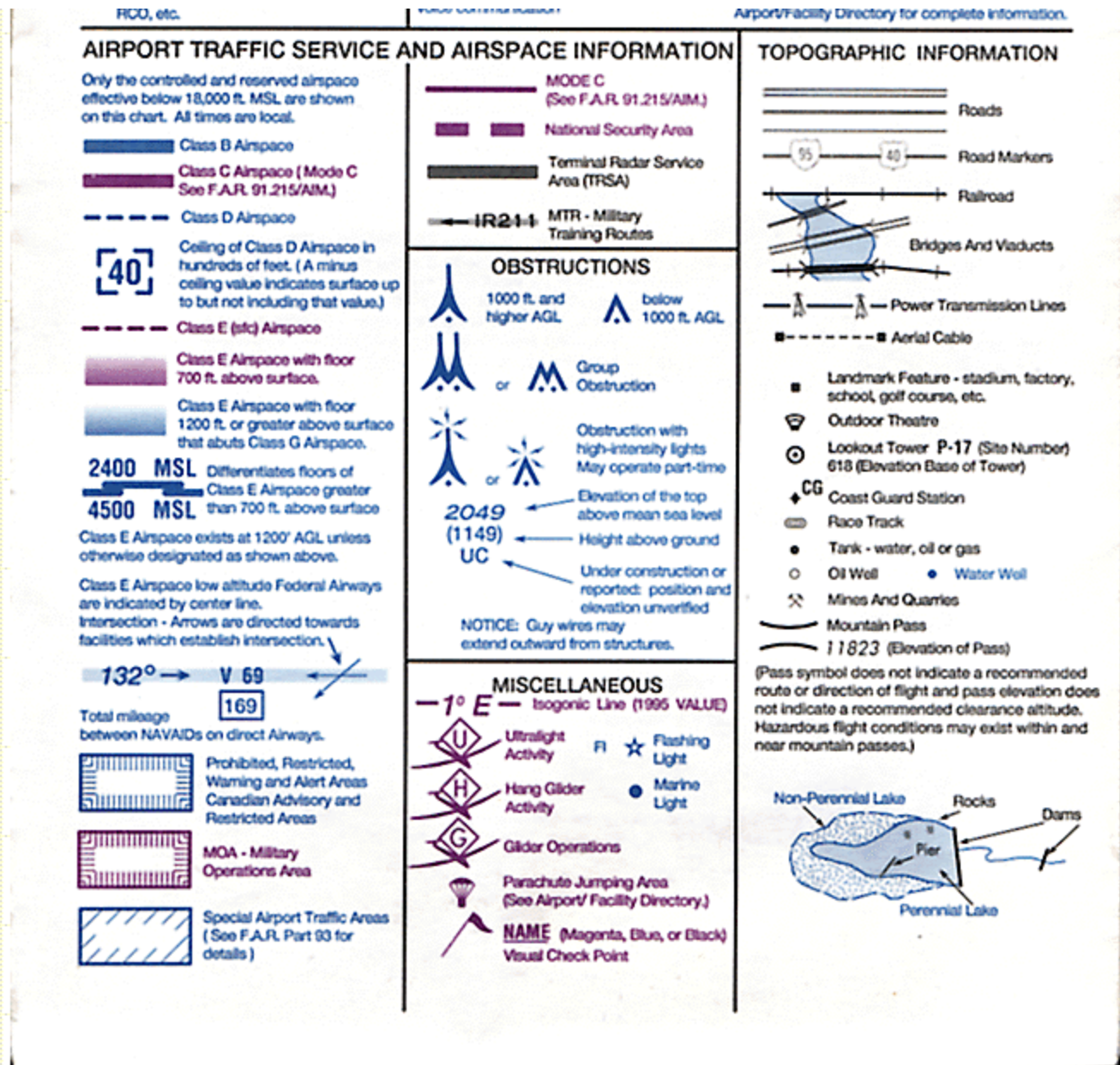IUE (no; Class G airspace)
IUC (Class E airspace)
IUS (no; Class G airspace)
Bradford Woods (no; Class G airspace)
Camp Brosius (no; Class G airspace)
Judson Mead Geologic Station (no; Class G airspace)

We have been told by one office of the FAA that waivers are specific to the Part 107 pilot requesting them, i.e., "IU" can't request a waiver for all drone flights in Class E airspace over IUB.

AIRPORT TRAFFIC SERVICE AND AIRSPACE INFORMATION

Only the controlled and reserved airspace effective below 18,000 ft. MSL are shown on this chart. All times are local.

▬▬▬ Class B Airspace

▬▬▬ Class C Airspace (Mode C See F.A.R. 91.215/AIM.)

- - - - Class D Airspace

[40] Ceiling of Class D Airspace in hundreds of feet. (A minus ceiling value indicates surface up to but not including that value.)

- - - - Class E (sfc) Airspace

▬▬▬ Class E Airspace with floor 700 ft. above surface.

▬▬▬ Class E Airspace with floor 1200 ft. or greater above surface that abuts Class G Airspace.

2400 MSL
Differentiates floors of Class E Airspace greater
4500 MSL
than 700 ft. above surface

Class E Airspace exists at 1200' AGL unless otherwise designated as shown above.

Class E Airspace low altitude Federal Airways are indicated by center line.
Intersection - Arrows are directed towards facilities which establish intersection.

132° → V 69 ←
[169]
Total mileage between NAVAIDs on direct Airways.

Prohibited, Restricted, Warning and Alert Areas Canadian Advisory and Restricted Areas

MOA - Military Operations Area

Special Airport Traffic Areas (See F.A.R. Part 93 for details)

▬▬▬ MODE C (See F.A.R. 91.215/AIM.)

▬ ▬ National Security Area

▬▬▬ Terminal Radar Service Area (TRSA)

←IR211 MTR - Military Training Routes

OBSTRUCTIONS

Λ 1000 ft. and higher AGL

Λ below 1000 ft. AGL

Λ or M Group Obstruction

Obstruction with high-intensity lights May operate part-time

2049 ← Elevation of the top above mean sea level
(1149) ← Height above ground
UC ← Under construction or reported: position and elevation unverified

NOTICE: Guy wires may extend outward from structures.

MISCELLANEOUS

—1° E— Isogonic Line (1995 VALUE)

Ultralight Activity   Fl ☆ Flashing Light

Hang Glider Activity   ● Marine Light

Glider Operations

Parachute Jumping Area (See Airport/Facility Directory.)

NAME (Magenta, Blue, or Black) Visual Check Point

TOPOGRAPHIC INFORMATION

═══════ Roads

—⑮——⑭— Road Markers

+—+—+ Railroad

Bridges And Viaducts

—Λ——Λ— Power Transmission Lines

■- - - - - -■ Aerial Cable

■ Landmark Feature - stadium, factory, school, golf course, etc.

⊖ Outdoor Theatre

⊙ Lookout Tower P-17 (Site Number) 618 (Elevation Base of Tower)

♦CG Coast Guard Station

⊂⊃ Race Track

● Tank - water, oil or gas

○ Oil Well   ● Water Well

⚒ Mines And Quarries

⌒ Mountain Pass

⌒ 11823 (Elevation of Pass)

(Pass symbol does not indicate a recommended route or direction of flight and pass elevation does not indicate a recommended clearance altitude. Hazardous flight conditions may exist within and near mountain passes.)

Non-Perennial Lake   Rocks   Dams   Pier   Perennial Lake

This is the legend for the maps you see at the above URLs. Referring to the map for Bloomington IN, IU's first Part 107 approved pilot, Eric Rudd, says:

Here is a screen grab from a chart I found online (the chart above). If you look at the first column, you see a dashed blue line for Class D airspace. On your online chart (the BMG chart), you will see this circle around BMG at 5 miles. The airspace from the surface to 3300' is controlled in Class D at this airport (the top varies with the airport).

Also, you see a large magenta "haze" circle around BMG. This delineates Class E controlled airspace. If you look at the legend you see this airspace STARTS at 700 AGL

(above ground level) and goes up to 18,000'. However, air traffic control can morph the shape of controlled airspace to accommodate certain types of traffic. If you look at the magenta haze circle, you also see three magenta notches or "keyholes" that cut into the haze circle, delineated by magenta dashes. One of these notches goes off to the north east - directly over the IUB campus. This means, in those three areas, Class E goes to the surface, .not stopping at 700 AGL. It's logical. The airport has instrument approaches for these runways. In bad weather, when a pilot is navigating to take off and land with instruments only ATC needs more complete airspace control along the centerlines of the runways to provide separation from other aircraft, the ground and its obstacles, and the weather.

It's partly this 700' Class E base that allows drone pilots to fly no higher than 400' AGL. We typically would be 300 feet below the lowest point that controlled air traffic would be traveling, coupled with the fact that aircraft are typically required to stay a minimum of 500' above obstacles on the ground. (See where this all intersects??)

400 feet AGL for drones guarantees at least 100 feet of separation from any aircraft typically flying over the ground in almost all circumstances. (There are exceptions, such as military activity, etc.)

Eric tells me getting the waiver is a long process, so start early. You can see Eric's waiver at https://inlocc.iu.edu/Docs/FAA Form 7711-1 2016-CSA-145-P-107 UI BMG.pdf .

Other helpful sites are Fact Sheet – Small Unmanned Aircraft Regulations (Part 107) and Unmanned Aircraft Systems (UAS) Frequently Asked Questions/Help.