

Drones – Beginner Basics

Drones, UAS, UAV, sUAS Introduction and Fundamentals
Community Education – Fall 2024



PICTURES OVER
STILLWATER



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Drone Basics Beginner – Drone Fundamentals

Flying Fun, Flying Smart, Flying Safe - #Dronesforgood

Wide World of Drones

- ✓ Unmanned Aerial Systems/Vehicles
- ✓ Singles, Quads, Rotor, Fixed Wing
- ✓ Tiny, Small, Medium, Large, Very Large
- ✓ Racing, Aerobatics, FPV, GPS, Camera
- ✓ DIY, Kits, Hobby/Recreate, Commercial

Operate

- Equipment, apps, software tools
- Aircraft, controller, display, batteries
- Pre (and post) flight activities
- Basic flight control operations
- Practice, using simulators

Aviate

- License/Certification (TRUST, 107)
- Aircraft Registration (DroneZone)
- Insurance Considerations
- Safe Flying Outdoors (and indoors)
- Rules of the road and air



Planning, Flying Safe

- When to fly (WX, TFRs, day/night)
- Weather to fly (wind, ceiling, visibility)
- Where to fly (type of airspace)
- Airspace authorizations (LAANC)
- Where to fly from (ground restrictions)

Drones Basics Beginner – Wide World of Drones (Functionality Varies)

Flying Fun, Flying Smart, Flying Safe

- Aircraft

- Integrated gimbal stabilized camera/sensor
- GPS enabled, optical and other sensors
- Size, weight, max take off weight (MTOW)
- Folding or non-folding arms, props, low noise props
- Battery size, endurance, flight time, recharge
- Transmission distance (keep in mind VLOS)
- **Remote ID (RID)** built-in or add-on module
- Safety features:
 - Simulators and training tools (e.g. DJI Virtual Flight [free] and others)
 - High visibility lights (various colors)
 - Prop guards/cage, altitude & distance limits, learning modes
 - Return to Home (RTH) automatic, push button on controller
 - Low battery and signal loss, what to do
 - Obstacle Avoidance (OA), aka AI or Vision (None, forward, around, full 360)



DB120 RID Module

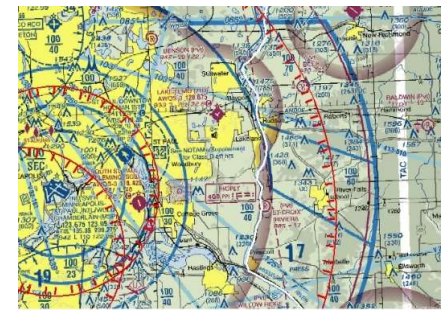
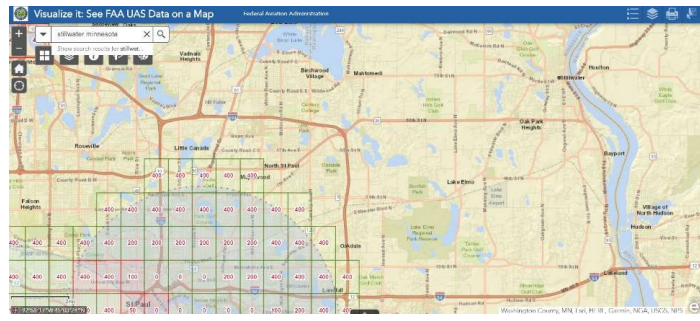
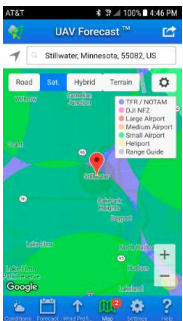


Smart Controller

FAA Drone Safety - What do you need to know before you fly

Planning and Preparations – Where flying (airspace) & flying from (ground location)?

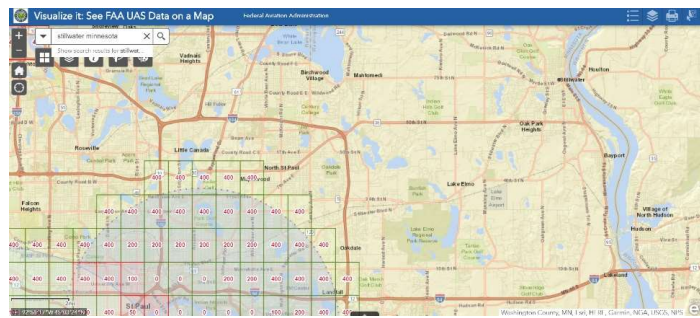
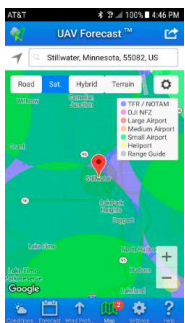
- Will you be flying from a new location and/or, in new airspace?
- What is your flight mission (photo, video, fun, other)?
- How far and high will you be flying? Will you need a VO?
- What are your emergency and contingency procedures?
- How much battery do you need to return to home (cold weather impact)?
- Will you be flying manual or autonomous?



FAA Drone Safety - What do you need to know before you fly

Planning and Preparations – Where flying (airspace) & flying from (ground location)?

- Get your TRUST certificate and/or your part 107 certificate
- Stay below 400' Above Ground Level (AGL) or lower if in controlled airspace
- Use LAANC enabled tool for controlled airspace authorization
- Maintain Visual Line of Sight (VLOS) on your aircraft (Drone)
- Yield to manned aircraft, don't interfere with emergency responders
- Stay 500' below clouds, 2000' horizontal from clouds, 3 miles visibility
- Don't fly reckless or over people or moving vehicles



Drone Basics Beginner – Links, Where To Learn More

Flying Fun, Flying Smart, Flying Safe – Various Resources With More Information

Some Drone Sites and Resources

- Federal Aviation Administration (FAA) Drone sites [Faa.gov/uas](https://www.faa.gov/uas) & [faasafety.gov](https://www.faa.gov/faasafety)
- Drone registration for Hobby (> .55lbs) and part 107 (anything under 55 lbs)
<https://faadronezone.faa.gov/#/> (Watch out for fake or over priced sites)
- Rec/hobby 44809 TRUST test (online, its free, follow the links)
https://www.faa.gov/uas/recreational_fliers/knowledge_test_updates/
- B4UFLY (FAA Free App, Info, LAANC authorizations) - [faa.gov/uas/getting_started/b4uflly](https://www.faa.gov/uas/getting_started/b4uflly)
- DJI Virtual Flight Simulator (Free) - [dji.com/downloads/djiapp/dji-virtual-flight](https://www.dji.com/downloads/djiapp/dji-virtual-flight)
- MnDoT Aviation (Commercial Drone License & Registration [dot.state.mn.us/aero/drones](https://www.dot.state.mn.us/aero/drones)
- Facebook: The Mighty Drones – FPV Drone Racing [facebook.com/groups/themightydrones](https://www.facebook.com/groups/themightydrones)
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Drone Basics Beginner – Links, Where To Learn More

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Some Recommended Tools/Apps/Links:

- ✓ B4UFly and UAV Forecast and FAA Visualize It
- ✓ Aloft App (Air Control) – LAANC
- ✓ FAA TFR Map - tfr.faa.gov/tfr2/list.html
- ✓ [FAA The Recreational UAS Test \(Trust\)](https://www.faa.gov/uas/trust)
- ✓ [Skyvector.com](https://skyvector.com) & vfrmap.com
- ✓ <https://faadronezone-access.faa.gov/#/>
- ✓ <https://faasafety.gov>
- ✓ View more at [PicturesOverStillwater.com/links](https://picturesoverstillwater.com/links)

ASA 2024 Remote Pilot Test Prep (Via Amazon.com) - <https://amzn.to/3yPqPl1>

Part 107 Small Unmanned Aircraft Systems (small UAS) Recurrent

<https://www.faasafety.gov/gslac/ALC/CourseLanding.aspx?cID=515>

Part 107 Small Unmanned Aircraft Systems (small UAS) Initial

<https://www.faasafety.gov/gslac/ALC/CourseLanding.aspx?cID=451>