

Greater St Louis Area Council STEM Exploration

DRONES

This module is designed to help you explore how drones are involved in everyday life.

1) Exploration

Learn about the history, manufacture, and use of drones or unmanned aerial vehicles (UAVs). This can include watching videos or live performances or reading
(Cub Scouts do 30 – 60 mins; Scouts BSA and Venturing – 2 hours)

Then do the following:

- a) Keep a list of the sources you read/watched to show your counselor.
- b) Create at least 3 to 5 questions or ideas from what you learned.
- c) Discuss two of the questions or ideas with your counselor that relate to drones or unmanned aerial vehicles. What did you find most interesting? How might you get answers to your questions?

2) Drone Pre-flight activities

Before flying, it is important to know as much as possible about the drone / UAV you will be flying. Find answers for each of the following.

- a) Name the four main types of drones / UAVs.
- b) List four components of a drone that are required for it to fly.
- c) What are two similarities and two differences between hobbyist and commercial drones?
- d) List three differences between rotor drones and fixed wing drones.
- e) Pick an industry and explain three ways the industry is currently using drones or could benefit from using drones in the future.

3) Safety Check

It is important to understand the safety requirements and where you are permitted to fly a drone.

- a) Where do you find the rules and safety tips to help you fly safely?
- b) List five of these rules for recreational flyers and three for commercial flyers

- c) Complete the Recreational Drone Safety Test.

(Cub Scouts please do this with an adult)

[\(https://pilotinstitute.com/courses/drones/\)](https://pilotinstitute.com/courses/drones/) and click on the header “TRUST”

Or you can access the Pilot Institute TRUST website directly at:

[\(https://trust.pilotinstitute.com/login/signup.php\)](https://trust.pilotinstitute.com/login/signup.php)

This free website will let you get your recreational drone certificate to be able to legally fly your drone. Be sure to download your certificate before exiting the site as all your information (account) will be deleted once you finish the exam.

- d) Discuss with your counselor or another adult why these rules are important.

4) Visit / Meet / Experiment

Complete THREE activities from the following list.

- a) Visit a place where drones/UAVs are used and talk to someone about how they use drones (this can be done virtually by watching a drone/UAV being used). Discuss with your counselor what you learned from this visit.
- b) Watch the following video or a similar video instruction on how to fly a drone: https://www.youtube.com/watch?v=N_XneaFmOmU Take notes to talk with your counselor about what you watched.
- c) Build a drone and show it to your counselor
- From a kit (*SBSA and Venturing*)
 - Make a model of a drone using recycled materials (*Bear to AOL Cub Scouts*)
 - Draw a picture of a drone and label the parts of the drone (*Lion/Tiger Scouts*)
- d) Fly a drone for ~15-30 minutes
- A drone with a controller (*Bear to AOL Cub Scouts*)
 - A “hand operated” drone (*Lion/Tiger Scouts*). Search Amazon or internet for hand-operated drones.
 - Obstacle flight test – set up an obstacle course, ie: a hula hoop taped to stand up and maneuver the drone through the obstacle.
- e) Come up with five potential new uses for drones
- f) Learn about Drone racing and report what you learn to your counselor.
- g) Learn about careers involving drones and report what you learn to your counselor.

5) Discuss

Reflect on what you have done in this module, and how the technology of drones impacts your everyday life. Discuss with your counselor what you have learned and what you expect in the future regarding drones.

Counselor Notes

- Many of these activities involved accessing the internet. Please make sure the Scouts follow safe internet practices.
- It is a good idea for Cub Scouts to work with an adult on these activities.
- Some activities are marked for the specific Scout program (Cub Scouts, Scouts BSA, Venturing as well as Tiger/Lion CS). Please be sure to follow this guidance. If activities are not marked with a specific Scout program, then all Scouts would complete these activities.
- There are several links to reference materials. These will need to be checked periodically to make sure they have not changed.
- A Scout can do more than the required activities but they do not have to do more to earn the recognition patch.
- There are numerous opportunities for some of these activities to be turned into awesome Unit or Camporee activities for a fun STEM experience.