



# 4-H Aerospace Project



## Are you Into It?

Learn about rockets and planes and what it takes to make them fly.

Are you fascinated with the science of flight on earth and in space? If so, you will enjoy taking part in the 4-H Aerospace Project where you will:

- Explore the aerodynamics of flight and design as well as satellite and space technology
- Develop skills in science, technology, and engineering
- Learn how to problem solve like an engineer
- Develop teamwork and communication skills by working in teams to build and test your flying machines
- Share your knowledge and skills with others

## Here's what you can do all year!

### Starting Out Basic

- Make different types of paper airplanes
- Learn about different types of aircraft
- Investigate the similarities and differences between birds and airplanes
- Learn how weather affects flying conditions
- Make a space helmet
- Build and fly a kite
- Learn how to identify star constellations and how they are used for navigation

### Learning More Intermediate

- Design, build, and launch model rockets
- Learn the forces that act upon a rocket and experiment with roll, pitch, and yaw
- Learn to read a flight map
- Design, build, and test a hot-air balloon model
- Investigate the science of flight, rocketry, and aerospace
- Design and conduct an experiment related to aerospace for your local science fair

### Expanding Horizons Advanced

- Make an altitude tracker to track the altitude of the air and space craft you design and build
- Learn pilot certification requirements
- Investigate careers related to aerospace, satellites, meteorology, air traffic control, and other flight support services
- Build a flight simulator
- Plan a flight route
- Discover the effects of gravity

## Step It Up!

Pass it on! Now that you know how, share it with others. Here are ideas to get you started

### Citizenship/ Leadership

- Volunteer for the civil air patrol
- Follow the International Space Station and have a "space gazing" night to watch the flyover
- Help lead an aerospace summer camp for younger youth
- Teach others how to fly a kite or build a paper airplane

### Communication

- Do an illustrated talk on the parts of a rocket
- Do a 4-H demonstration on how to build a paper airplane
- Give a speech or presentation about the international space station or satellites for your club meeting

### Healthy Living

- Learn about how to stay healthy when flying: how to stay hydrated, the importance of physical movement on long flights, and what food and drinks to avoid
- Learn how astronauts stay healthy in space and give a talk about it for your club

### Science

- Design an experiment to investigate the forces of gravity
- Experiment with different fin or wing designs
- Investigate how wind affects your plane, kite, or rocket
- Learn how and why runways are coded



## Expand Your Experiences in Aerospace!

- Attend a star-gazing program at a local planetarium or science museum
- Explore fields of study associated with aerospace: meteorology, GPS/GIS, and engineering. Schedule a visit with the University of Florida: [ufl.edu](http://ufl.edu)
- Register for 4-H University to attend workshops, participate in community service events, hear keynotes, compete in contests, have fun, and meet other youth from across Florida who may share common interests: [florida4h.org/programsandevents/](http://florida4h.org/programsandevents/)
- Contact your county IFAS Extension Office for workshops, activities, and events related to community service
- Participate in program planning, development, and implementation for new Aerospace programs in your 4-H Club
- Facilitate the National Youth Science Day experiment, Rockets Away! [4h.org/nysd](http://4h.org/nysd)

### Project Sharing Ideas

- Make a poster about the parts of an airplane or rocket and explain the function of each
- Create a display about the different forces that act on a rocket
- Exhibit a model rocket, plane, hot air balloon, or helicopter
- Demonstrate how weather affects flying
- Demonstrate how to measure altitude with an altitude tracker
- Make a YouTube video on how to fold a paper airplane or how to stay healthy on a long flight.

## Resources

### 4-H Project Resources

Project materials to assist youth in learning may be available through your county 4-H office or you can order directly. Available at National 4-H:

[4-hmall.org](http://4-hmall.org)

- Pre-Flight
- Lift-Off
- Reaching New Heights
- Pilot in Command
- Helpers Guide

Rockets Away! Ohio State Extension 4-H Aerospace Project [estore.osu-extension.org/](http://estore.osu-extension.org/).

Wisconsin 4-H Aerospace Activities- [4h.uwex.edu/onlinpro/aerospac e.cfm](http://4h.uwex.edu/onlinpro/aerospac e.cfm).

NASA Educator's Guide- [www.nasa.gov/pdf/58152main Aeronautics.Educator.pdf](http://www.nasa.gov/pdf/58152main Aeronautics.Educator.pdf).

### Connections and Events

Attending events and taking advantage of opportunities that will expand your project learning will help you become the best you can be. Contact your county 4-H office.

Take part in:

- Local workshops, day camps, and science museums
- 4-H County Events Day
- TARC- Team America Rocketry Challenge [rocketcontest.org/](http://rocketcontest.org/).

Experience

- 4-H Summer Day and Residential Camps
- 4-H University

Attend other statewide events. Check them out at [florida4-h.org](http://florida4-h.org)

### Record Keeping

Learning to take good records of what you do and what you spend for your project is a 4-H life skill.

The following record keeping forms can help you keep a record of your activities.

Project Report Forms can be found at [florida4h.org](http://florida4h.org)

- Junior (grades 4-6)
- Intermediate (grades 7-8)
- Senior (grades 9-12)
- Financial Summary
- Member Portfolio (ages 8-13)

### Awards and Recognition

Florida's Recognition Program involves feedback through:

- Participation
- Setting Goals
- Meeting Standards
- Peer Competition
- Cooperation

Certificates, pins, ribbons, trophies, trips and/or scholarships are awarded based on quality of performance at the county, district, state and national levels.

To learn more about current recognition opportunities visit the Florida 4-H website at [florida4h.org](http://florida4h.org) or contact your county 4-H agent.

Learn more at [florida4h.org](http://florida4h.org)  
or contact your local UF/IFAS Extension County Office

**4-H You**  
GROWING TOGETHER