This 4-H project is designed to help you explore the world of aerospace, from learning about rocket parts and how they fly to building a rocket and demonstrating to others what you have learned.

Here’s what you can do all year!

### Stage 1
**Pre-Flight**
*Grades 1-3*
- Build a rocket and identify rocket parts.
- Learn how birds and airplanes fly; compare birds to airplanes.
- Identify aerospace careers.
- Design and make a spacecraft.

### Stage 2
**Lift-Off**
*Grades 3-5*
- Make and read a map.
- Identify types of aircraft.
- Discover how weather affects flying.
- Understand the “angle of attack.”
- Identify parts of a hot-air balloon and make a hot-air balloon.
- Learn and use the International Phonetic Alphabet.
- Discover the effects of disorientation in space.

### Stage 3
**Reaching New Heights**
*Grades 6-8*
- Build a straw and balloon rocket.
- Make a paper flight simulator.
- Make a flying wing glider.
- Build a controllable glider.
- Build a Nagasaki Hata Fighter kite.
- Discover basic helicopter functions and parts.
- Make a hang glider.

### Stage 4
**Pilot in Command**
*Grades 9-12*
- Build a Viking rocket.
- Construct and use an altitude tracker.
- Research how to qualify for a pilot’s certificate.
- Plan and teach an aerospace session.
- Evaluate and design navigation systems.
- Build a flat-style box kite.
- Complete a career profile.

### Communication
- Prepare and give a speech about a model rocket exhibit at a science fair, club or achievement days.
- Demonstrate glider flight capabilities.
- Interview a pilot.

### Citizenship
- Organize a rocket launch.
- Organize a kite-flying contest.
- Volunteer at a local airport or airshow.

### Leadership
- Organize an airport tour for your 4-H club.
- Conduct an aerospace skillathon.
- Teach a workshop on aerospace.

### Entrepreneurship
- Build and sell kites.
- Organize a kite flight contest.
- Teach a class on model rocketry, kite building and model airplane flying.
- Open a small retail operation to sell airplane, kite and rocket kits.

Learn more at [www.ndsu.edu/4h](http://www.ndsu.edu/4h) or contact your county NDSU Extension office.
Opportunities to explore aerospace:

- Explore an aerospace career using online resources.
- Shadow an airline employee for one day.
- Attend an aerospace event or camp.
- Visit a local airport and have a pilot and/or mechanic talk about flying.
- Look for opportunities to take the ground school portion of a flight training class.
- Visit with an aircraft maintenance engineer to learn about aircraft maintenance.
- Take a flight with a flight instructor.

### 4-H Resources
- National 4-H Curriculum Books
  - Pre-Flight (HCA131)
  - Lift-Off (HCA132)
  - Reaching New Heights (HCA133)
- Pilot in Command (HCA134)
- Flight Crew Helper’s Guide (HCA231)
- Educational Trunk
- Aerospace Event
- National Youth Science Day

### Other Resources
- UND Aerospace
- Basics of Rocketry (Educators area of NASA website)
- National Association of Rocketry
- NASA Science
- NASA Kids Club
- NASA Education for Students
- NASA Education for Educators

### Recordkeeping
- Planning for My Project Adventure (PA093) (Ages 8-10)
- 4-H Project Plan (PA095)
- 4-H Plan of Action (PA096) (Ages 11-18)
- ND 4-H Participation Summary for 11- to 19-year-olds (PA098)

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