

# Texas 4-H Rocketry Project

## Project Description

The Texas 4-H Rocketry project ignites the passion of young space enthusiasts, guiding them through the thrilling process of designing, building, and launching rockets, while emphasizing safety and scientific principles.

The Texas 4-H Rocketry project propels young minds into the exhilarating domain of aerospace. Participants embark on a journey that begins with understanding the basic principles of aerodynamics and propulsion, laying the foundation for their foray into rocket science. As they progress, they design and build their own rockets, learning the nuances of stability, thrust, and flight trajectories. Through hands-on experiments and launches, they witness firsthand the results of their calculations and designs.

### Basic

- Introduction to the principles of flight and rocketry.
- Familiarity with different types of rockets and their components.
- Basics of rocket design and stability.
- Introduction to safe launch procedures.
- Building and launching simple model rockets.

### Intermediate

- Delving into the science of propulsion
- Designing rockets with specific flight objectives
- Basics of payload integration and considerations.
- Understanding of flight dynamics and trajectory predictions.
- Launching and analyzing mid-powered rockets.

### Advanced

- Integration of onboard electronics and telemetry systems.
- Exploration of multi-stage rockets and their applications.
- Simulations and real-world testing of advanced rocket systems.

# TAKE ROCKETRY FURTHER

## *Project Learning Opportunities:*

- Workshops: Practical sessions to learn new design techniques, propulsion systems, or safety protocols.
- Rocket Launch Days: Organized events where members can launch their rockets and witness others' launches.
- Tours: Visits to aerospace facilities, observatories, or space museums to gain broader knowledge.
- Project Meetings: Regular gatherings to discuss designs, share experiences, and plan launches.
- Competitions: Events where members can compete based on rocket design, altitude achieved, or other criteria.
- Guest Lectures: Talks by aerospace engineers, astronauts, or experts in the field of rocketry.
- Field Trips: Visits to launch sites, aerospace exhibitions, or related events.
- Simulation Sessions: Workshops or meetings where members use software to predict rocket trajectories or design components.
- Join STEM Ambassador program

## *Resources:*

- Texas 4-H Rocketry & Aerospace web page
  - <https://texas4-h.tamu.edu/projects/rocketry-aerospace/>
- NASA's Rockets Educator Guide
  - <https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Rockets.html>
- American Rocketry Challenge
  - <https://rocketcontest.org/>
- Space Center Houston - Education Programs
  - <https://spacecenter.org/education-programs/>

## *Did you know?*

4-H is a club for kids and teens to develop life skills and make friends. Youth can join 4-H in all 254 counties. Everybody ages 8-18 and in 3rd-12th grades can join 4-H. Kids in Kindergarten to 2nd grades can join as Clover Kids. There are 43 different project areas in five project categories: Agriculture & Livestock, Family & Community Health, Leadership & Citizenship, Natural Resources, and STEM.

## *Want to get started?*

First...Contact your County Extension Agent!

- Contact information can be found at [texas4-h.tamu.edu](https://texas4-h.tamu.edu) > contacts information at the bottom of the page > county offices

**Explore more at [texas4-h.tamu.edu](https://texas4-h.tamu.edu)**