COLORADO STATE UNIVERSITY
EXTENSION

Model Rocketry

Project Unit 1 is designed for all members who want an introduction to model rocketry.

Unit 1 - Introduction to Model Rocketry

Inspiring youth to:

- Understand the NAR Model Rocket Safety Code
- Learn basic parts and types of a model rocket and motors/engines
- Learn how to select and build a model rocket from a kit
- Learn the launching and recovery parts and procedures for rockets
- Complete various activities

Project Unit 2 expands on Unit 1 and covers construction and flight of model rockets.

Unit 2 - Construction & Flight of Model Rockets

Inspiring youth to:

- Understand the forces of flight and Newton's Laws.
- Learn design features of a model rocket including stability
- Understand tools and techniques needed for building model rockets
- Complete various activities

Project Unit 3 is designed for all members and uses and builds upon skills learned in Units 1 & 2.

Unit 3 - Intermediate Model Rocketry

Inspiring youth to:

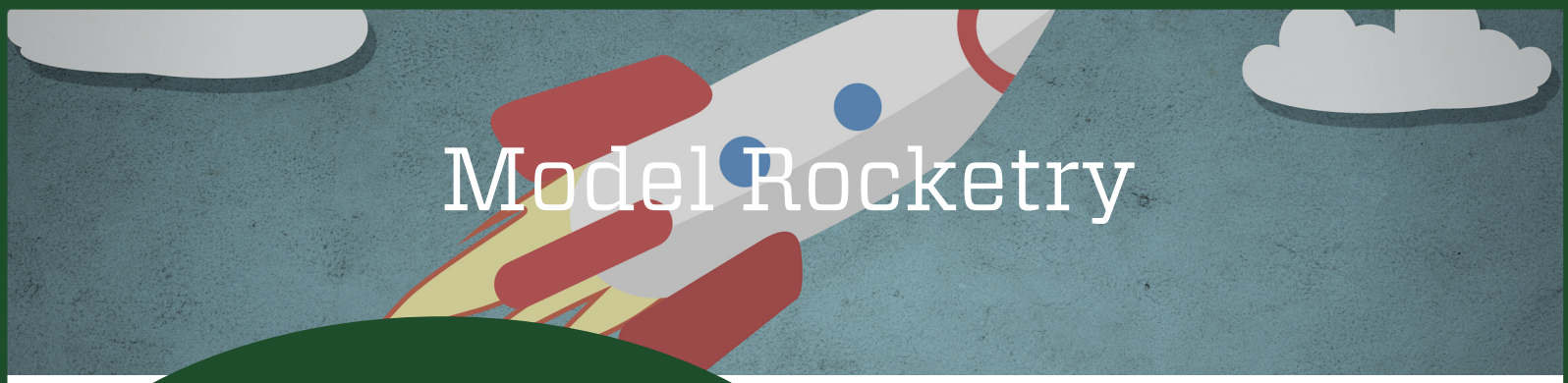
- Learn multi-staging launch systems
- Learn rear and front engine boost gliders

Project Units 4 & 6 is designed for all members and uses advanced rocketry skills.

Unit 4 - Advanced Model Rocketry

Inspiring youth to:

- Learn how to organize a model rocket club
- Learn engine types, classifications, and performance
- Learn how to fit a parachute
- Learn the art of payload launch
- Learn about rocket stability
- Learn how to build a wind tunnel
- Take aerial photographs
- Understand why you need cluster rockets



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Project Tips:

- For Units 3, 4 and 6, the completed manual should be added in back of the e-record in a binder/notebook
- All units are progressive and should be done in order
- Enter your project in the county fair

Launch Tips:

- Make sure batteries are in good condition.
- Make sure micro-clips do not touch each other or any other metal.
- Don't forget the recovery wadding.
- Use the right size igniter plug; a plug that is too big will block out the oxygen.
- Be sure that the coated tip of the igniter is in direct contact with the engine propellant.

Paint Tips:

- Apply sanding sealer and sand using a 320-grit increasing to 600-grit for fine finishes on balsa and basswood fins. For plywood fins start with 180- or 280-grit sandpaper.
- When applying primer and sand repeat two or three times.
- Apply spray paint with several light coats, using a spray handle for spray cans.
- Apply final coat of clear coat enamel.
- Do not use decals that soak in water.

Judging Criteria:

- Paint should be evenly applied and smooth
- Check nose cone for fit and surface
- Check fin alignment, smoothness, and fillet
- Check proper placement of launch lug
- Check recovery system and engine mount area

Resources:

- Exhibit & Judging Requirements
- Record Books
- Manual Information

Located at: Colorado4h.org

COLORADO STATE UNIVERSITY EXTENSION

Rocketry & Aerospace Careers

Manufacturing & Trade
Space vehicles, satellites, ground equipment; search, detection, navigation, and guidance systems

Government & Research
Work at military, civilian, and federally funded research and development centers

Data and Information
Collect, analyze and report data; telecommunications, broadcasting, software, computer systems

Maintenance & Inspections
Working on the engine, the airframe, or the electronic systems; ensuring safety

COLORADO STATE UNIVERSITY EXTENSION

Degrees/Certifications:

Aerospace Engineering
Electrical Engineering
Rocket Scientist
Aviation Maintenance Technician
Chemistry or Physics
Computer Scientist
Software Engineering/Development

Construction/Assembly
Building space facilities, observatories, planetariums, educational facilities

Aircraft or Spacecraft Design/Engineering
Use science and math to design and test aircraft and spacecraft

Astronaut/Pilot/Air Traffic Control
Fly to space, in the military, for major carriers; coordinate air traffic

Business or Marketing
Aviation businesses need help with aircraft dispatch, marketing, logistics, education, research, and airport management