Youth Rocketry Program

South Texas / Hands-on STEM

Estes low-power model rockets. Guided learning. Safety first.

Students explore how rockets fly, assemble Estes beginner model rocket kits with step-by-step coaching, and work toward a supervised launch. No experience required. Offered as an after-school workshop or camp, with **6–12 facilitated sessions**.

Program Guide: George “Randy” Collins — 30 years of high-power rocketry experience. That experience is biographical background only. This program is exclusively **Estes low-power model rocketry**; high-power flights and certifications are excluded.

Learn through a real mission

Students explore rocket parts and forces of flight, measurement and stability, careful assembly and quality checks, recovery systems and flight observations. They practice teamwork, leadership, perseverance and communication while exploring aerospace careers.

Eight-session learning plan

Session	Learning mission
1	Welcome, safety, rocket parts and team roles
2	How rockets fly: thrust, gravity, drag and stability
3	Kit instructions, components and build sequence
4	Guided assembly with safety and quality checks
5	Recovery system preparation and inspection
6	Flight predictions, weather and launch roles
7	Launch rehearsal and readiness checklist
8	Supervised launch, recovery, debrief and celebration

The eight-session core adds assembly and analysis time and includes the approved launch and reflection in session eight, subject to conditions. Confirm session lengths and launch arrangements.

Schedule distinction: The separate six-session lesson format is a 75-minute introduction plus five 60–75-minute learning sessions. It has a **separate approved outdoor launch of about 90 minutes**, before the final reflection session, or a video alternative. Confirm the separate launch’s timing, staffing and fee; do not assume an extra Guide session is included in the six-session fee. The 12-session advanced/extended format stays low-power; its exact sequence and arrangements must be confirmed.

Age-appropriate pathways

K–5 Explorers: Simple kits or demonstrations, vocabulary and measurement. Younger children participate in demonstrations only, per kit age guidance and supervision. Kit-based lessons are designed for ages 8–17 with readiness-matched kits.

Grades 6–8 Builders: Guided assembly, stability, recovery and data. Measurement, logs and predictions deepen understanding.

Grades 9–12 Aerospace Lab: Estes model kits, flight planning, stability, data, technical records and career connections. Deeper analysis does not mean higher power.

All pathways follow manufacturer age, tool and supervision requirements. Easy-assembly or preassembled Estes kits are matched to student readiness.

What students take away

Build logs, checklists, photos and a team presentation document skills, teamwork and lessons learned. Obtain photo permissions. Students identify five parts, explain three functions, give two safety rules with reasons, demonstrate stopping and stepping back, and set a personal learning goal. Goals may be spoken, drawn, written or dictated and are revisited.

Class recognition celebrates learning and safety, **not certification**. Club discussion emphasizes responsible participation and current rules without implying an affiliation.

Safety at every step

> **STOP. ASK. VERIFY.** Stop immediately and step back whenever a step seems unsafe or unclear.

The Guide demonstrates techniques, supervises tool and material use, and checks readiness before each new stage. Use tools only with permission. The Guide can stop or postpone any activity.

Launch activities require Guide/range clearance, site rules, safe distances, weather and fire review, adult supervision, permissions, emergency procedures and recovery procedures. Use kit-recommended, certified commercial motors and compatible launch equipment. The Guide or responsible adult handles motor selection, installation and ignition. Students never modify motors or make propellant.

Practice uses inert mockups and disconnected equipment. Follow exact Estes instructions and the **current NAR Model Rocket Safety Code**. Stay behind the marked boundary, follow the countdown and watch the flight. Never approach a misfire independently; the official controls shutdown, waiting and approach under the current code. Recover only after clearance. Avoid roads, power lines, trees, water and restricted areas. Accept weather, fire and site delays; rehearse or use video if conditions are unsuitable and reschedule the launch.

Program pricing

Planning estimates for a 12-student cohort. Guide fee included at $175 per facilitated session.

Package	Guide fee	Estimated total
6-session pilot	$1,050	$2,975
8-session core	$1,400	$3,677
12-session advanced / extended	$2,100	$5,114

Eight-session core breakdown

Planning item	Allowance
Kits and consumables	$1,020
Reusable equipment	$600
Launch supplies / logistics	$450
Contingency	$207
Guide fee	$1,400
Estimated total	**$3,677**

About **$306 per student**. Reusing equipment can reduce future cohort costs. Estes kit, motor, consumable, equipment, launch/logistics and site quotes will confirm final pricing. Existing totals are **planning allowances, not final quotes**. Confirm the separate outdoor launch's fee and staffing for the six-session format.

Plan your youth rocketry program

Start with an **8-session, 12-student pilot**. Confirm ages, readiness, exact kits and dates, then approve the budget and a written safety plan, including permissions, adult supervision, emergency procedures and the approved launch venue.

The website's local planner creates an on-device draft only. It does not submit information, make a reservation or provide an approved safety plan. No account is required.

Official safety resources

Use the supplied instructions for the exact Estes model and launch equipment, alongside these resources:

- Estes education safety resources
- NAR Model Rocket Safety Code

Resource links do not imply affiliation or endorsement.