



The curriculum is modular. A school picks a preset of one, two, or three sessions, each 45 to 60 minutes, and the modules inside that track are chosen to fit the grade level, the class period, and the topic the class is studying. The program brings every material and all launch equipment.

PRESET TRACKS

1 SESSION

Build and launch

- Concept taught during the build
- Students assemble their rockets
- Launch and short debrief

2 SESSIONS

Build, then launch and analyze

- Session one: build
- Session two: launch and analysis

3 SESSIONS

Concept, build, launch, iterate

- Session one: concept lesson
- Session two: build
- Session three: launch, analysis, and a redesign round

MODULE LIBRARY

Water bottle rockets

Air pressure propulsion. Students build a rocket from a plastic bottle, then pressurize and launch it.

- Explain how compressed air forces water out of the bottle and pushes the rocket up
- Connect the launch to Newton's third law
- Build a rocket with fins and a nose cone that flies straight
- Predict how a design change will change the flight, then test it

MATERIALS Per pair: two plastic bottles, tape, scissors, cardboard. Launch system brought by the program.

Estes model rocket launch

Solid motor ignition, parachute recovery, and range safety.

- Describe how a solid rocket motor produces thrust
- Explain each stage of a flight: ignition, boost, coast, ejection, recovery
- Follow the range safety procedure used at every launch
- Explain how the parachute brings the rocket down safely

MATERIALS Estes rockets with A-class motors, igniters, launch pad and controller.

These four modules have been delivered so far. They are a starting point, not the full catalog: name the topic your class is on and a module is written for it.

States of matter

Physical science lesson delivered alongside the rocketry build.

- Name the states of matter and describe how particles behave in each
- Identify plasma as a fourth state, using a plasma globe demonstration
- Describe what changes when matter moves from one state to another
- Point out the liquid and the gas doing the work inside a water bottle rocket

MATERIALS Demonstration equipment, including a plasma globe.

Aerodynamic forces

Thrust, drag, lift, and weight, and how each acts on the rocket the students built.

- Identify the four forces acting on a rocket in flight
- Explain how fins and nose shape affect drag and stability
- Observe drag directly using an airflow demonstration
- Use the four forces to explain a flight they watched

MATERIALS Airflow demonstration equipment.

Water bottle rockets

The default for most schools. Needs an open field and a teacher from the school present.

Estes model rockets

A-class solid motor with parachute recovery. Needs an open field at least 100 feet across (NAR safety code for A motors) and adult supervision of the motor and igniter.

The program brings

- Build materials for every pair of students
- Launch systems for both rocket types
- Demonstration equipment
- The instruction, start to finish

The school provides

- A room with table space
- An open outdoor area
- A teacher, present for the whole session

On the day

Students build in pairs, with about ten students per instructor. A single session covers a short concept segment, the build, and the launch.

Request a session

Use the form at aimforthestarsmiami.org, or email nolanariask@gmail.com with your school, grade level, student count, and preferred number of sessions.