

NLA Rocketry Club – 2017-2018

Overview:

The NLA Rocketry Club will consist of students interested in designing model rockets to accomplish specific tasks. These rockets will compete against other students in the school. Students will form teams to work on the design, build, and testing of the rockets. This will resemble an engineering process, and the group will be expected to follow it. It will also count completely towards their 15% IP project in science class.

Teams:

- Depending on the number of students involved there will be several teams – for example, two middle school teams and one high school team.
- Teams will be determined as soon as possible.

Tasks:

- Notebook – the team will be expected to keep a project notebook that is maintained by the group. This may be a digital lab notebook.
- Research – team members will research possible rocket designs and the theory behind these designs. One or two team members may focus primarily on this.
- Build Prototypes – team members will build prototypes of rockets. The first prototype will likely be a rocket model purchased through Amazon or at a hobby store. Later prototypes will need to modify these designs so that they can more directly meet the requirements.
- Launch – Throughout the process, it will be necessary to launch the prototypes. All team members are expected to be there on launch days.
- Competition Launch – In the spring, there will be a designated day for the official launch of the final product. All teams will launch the same day.

Meeting Times:

- Teams will work independently outside of school for most of the project. It is vitally important the members of the teams communicate with each other.
- 15% IP days, team members will meet together for planning and strategy.
- Once a month, the team will meet with an advisor after school.
- Launch days need to be set up with all team members and advisor.

Requirements of Final Rocket:

- Body has two different diameters
- Carry 1 raw egg
- Powered by Estes solid fuel rockets class F or lower (as many as they want)
- Rocket must return with all parts attached together including engine
- Rocket must return with a “soft” landing – to be determined by judges

Targets and Scoring:

- Altitude Score = 800 ft. Score will be given based on how far from 800 ft. high rocket goes. This will be measured by electronic altimeter that will be purchased by school (\$35) or made by Chen Liu (student IP project)

- Duration Score = 42 seconds. Score will be given based on how close to 42 s rocket stays in the air. Time is measured with stopwatch from first motion of rocket on launch pad to when it touches the ground.
- Notebook Score = A score will be given based on quality of the lab notebook.

Penalties:

- Any crack in the raw egg will give significant deductions
- Any parts of rocket not attached will give significant deductions
- Any hard landing will give significant deductions.