



## Challenge Resource & Pacing Guide

Use this pacing guide to help you plan out how to participate in the NASA TechRise Student challenge.

### Challenge Overview:

The [NASA TechRise Student Challenge](https://www.futureengineers.org/nasatechrise) invites teams of sixth to 12th-grade students to design, build, and launch experiments on NASA-supported test flights. Guided by an educator, student teams affiliated with U.S. public, private, and charter schools can submit ideas for experiments to test on a rocket-powered lander that will fly for approximately two minutes over a test field designed to look like the moon's surface or a high-altitude balloon with exposure to Earth's atmosphere and views of our planet. A panel of judges will review the submitted experiment ideas and select 60 winning entries. Each winning team will receive \$1,500 to build their experiment and an assigned spot to test it on a NASA-sponsored flight operated by one of the following commercial flight providers – Astrobotic or World View.

### CHALLENGE LAUNCH VIDEO:

**CHALLENGE WEBSITE:** <https://www.futureengineers.org/nasatechrise>

### KEY DATES:

- Entries due: October 20<sup>th</sup>, 2023, 11:59 PM PT
- Winners Announced & Experiment Build Begins: January 16<sup>th</sup>, 2024
- Experiment Build Complete: May 9, 2024
- Experiments Launch: Summer 2024

**WHO CAN ENTER:** This is a challenge for SCHOOLS in the United States. U.S. public, private, or charter schools that serve 6<sup>th</sup> to 12<sup>th</sup>-grade students can assemble a team (or multiple teams) and enter. Minimum 4 students per team. No Maximum number of students per team. Proposals must be submitted by a team lead that is a teacher or employee of the school.

### NGSS STANDARDS ALIGNMENT

Middle School: [MS-ETS1-1](#), [MS-ETS1-2](#), [MS-ETS1-3](#), [MS-ETS1-4](#)

High School: [HS-ETS1-1](#), [HS-ETS1-2](#), [HS-ETS1-3](#), [HS-ETS1-4](#)

### GETTING STARTED:

Resource Type	Title	Description	Duration
Slide Deck	<a href="#">Challenge Overview Slides</a>	Get to know NASA's TechRise Student Challenge. Explore the challenge page, learn the five steps to participate in the challenge, and get an introduction to the proposal template.	10-15 min
Slide Deck	Learn About the <a href="#">Lander</a> & <a href="#">Balloon</a> Slide Decks	Use these slide decks to learn all about rocket-powered landers and high-altitude balloons and the environments they will provide your payload Then dive into what kinds of payload experiments can be done on these vehicles.	20 min

## IF YOUR TEAM CHOSE THE ROCKET-POWERED LANDER

Resource Type	Title	Description	Duration
PDF	<a href="#">Lander Design Guidelines</a>	Review the Rocket-Powered Lander Design Guidelines prior to planning your experiment.	5-10 min
Slide Deck	<a href="#">Lander Brainstorm</a>	Lander Teams: Use this slide deck to brainstorm possible rocket-powered lander experiments.	30-45 min
PDF Worksheet	<a href="#">Lander Brainstorm</a>	Lander Teams: Use this worksheet with the slide deck to help brainstorm possible rocket-powered lander experiments.	
Slide Deck	<a href="#">Plan Your Experiment Design</a>	Use this slide deck to start planning your experiment. First, learn about microcontrollers and how they can be used in your payload design. Next, learn the different types of hardware and components that can be used to plan out your experiment.	45-90 min
PDF Worksheet	<a href="#">Explore Components Design</a>	Use this worksheet with the slide deck to plan a rocket-powered lander experiment design.	
PDF	<a href="#">Proposal Template &amp; Guide</a>	Use this guide and template to create your NASA TechRise Proposal to enter the competition. Then submit your ENTRY!	Varies
PDF	<a href="#">Experiment Step by Step Example</a>	Use this "Basic Sensor How-To" to help you think through the steps you might take to begin building a payload, if selected as a winner. It is a sample of how to record temperature and humidity during a balloon flight. However, it provides an overview of some of the steps necessary to build an experiment.	90-120 min

## IF YOUR TEAM CHOSE THE HIGH-ALTITUDE BALLOON

Resource Type	Title	Description	Duration
PDF	<a href="#">Balloon Design Guidelines</a>	Review the High-Altitude Balloon Design Guidelines prior to planning your experiment.	5-10 min
Slide Deck	<a href="#">Balloon Brainstorm</a>	Balloon Teams: Use this slide deck to brainstorm possible balloon experiments.	30-45 min
PDF Worksheet	<a href="#">Balloon Brainstorm</a>	Balloon Teams: Use this worksheet with the slide deck to help brainstorm possible balloon experiments.	

Slide Deck	<a href="#">Plan Your Experiment Design</a>	Use this slide deck to start planning your experiment. First, learn about microcontrollers and how they can be used in your payload design. Next, learn the different types of hardware and components that can be used to plan out your experiment.	45-90 min
PDF Worksheet	<a href="#">Explore Components Design</a>	Use this worksheet with the slide deck to plan a balloon experiment design.	
PDF	<a href="#">Proposal Template &amp; Guide</a>	Use this guide and template to create your NASA TechRise Proposal to enter the competition. Then submit your ENTRY!	Varies
PDF	<a href="#">Experiment Step by Step Example</a>	Use this "Basic Sensor How-To" to help you think through the steps you might take to begin building a payload. It is a sample of how to record temperature and humidity during a balloon flight.	90-120 min