PROPOSAL EXAMPLE & TEMPLATE

Your team's entry must be a proposal submitted as a PDF (max 20 MB). Please review the example and template below to develop your proposal. DO NOT include personally identifiable information such as school names, team member first & last names, photos of people, or other identifiable information in your proposal. However, mentioning names of significant figures (e.g., an astronaut) is okay if it helps explain your entry. All other names will be redacted. Once written, the team lead (teacher or school employee) can submit the proposal on the challenge website. Per the NASA TechRise Student Challenge Rules, your team's proposal must be an original creation that has not been previously submitted for or selected as a winner in a promotion or competition of any type. Team leads can submit an unlimited number of proposals. All entries will be judged using the following criteria:

- 40 Points: Impact - To what extent does the submission demonstrate a positive impact on the team's education and community, providing an opportunity for the team to gain new STEM-related skills?
- 20 Points: Connection - How connected is the submission to NASA's mission to explore the unknown in air and space, innovate for the benefit of humanity, and inspire the world through discovery?
- 20 Points: Alignment - How well does the proposed design of the experiment support the team's hypothesis?
- 20 Points: Design - How well does the submission meet the design guidelines?

PROPOSAL TEMPLATE

To develop your NASA TechRise proposal, please use the template linked below and follow the proposal guidelines.

- Download the MSWord template HERE

Note - You are welcome to recreate the template so long as your proposal includes all of the required sections and meets the required font and margin guidelines listed below.

PROPOSAL GUIDELINES

Proposal Narrative: Pages 1-3

The proposal narrative should be written by STUDENTS. Generative AI is NOT allowed to create your proposal (spellcheck/grammar checks are allowed). The proposal may not exceed 3 pages (including in-text citations) and should be formatted using 11-point Times New Roman font, single-spaced, with 1-inch margins. The proposal narrative must include an experiment name and the three sections outlined in the Proposal Template, including the *what, how*, and *why* of your proposed experiment idea. DO NOT include hyperlinks to additional proposal information, files, or websites you have developed. This is beyond the 3-page limit. All links will be removed prior to judging.

PROPOSAL BASIC EXAMPLES

Suborbital-Spaceship Proposal Example (pages 2 – 4)
High-Altitude Balloon Proposal Example (pages 5 - 7)

Below, very basic example text for a suborbital-spaceship and high-altitude balloon proposal is provided for each proposal element to give teams a sense of the type of information the judges are seeking. This simple text is provided to help teams get started but should not constrain their thinking about the proposal topic or limit the level of detail in their responses.

SUBORBITAL-SPACESHIP EXPERIMENT: BASIC EXAMPLE

Experiment Name

Please provide a name for your proposed experiment.

Basic Example:

Proposed Experiment Name: Space Party

Section 1: WHAT is your team's experiment idea?

**Note: Check out the NASA TechRise Suborbital-Spaceship Brainstorm Slide Deck for inspiration.

1a. What do you want to investigate?
- Explain what you plan to measure, monitor, or evaluate during the flight.

Basic Example:

We want to investigate how confetti moves in a reduced gravity environment.

1b. How does your investigation help to explore space and/or study our home planet?
- Summarize any background research you have done.

Basic Example:

Studying how small particles, such as confetti, move in space is important to NASA scientists because it can improve our ability to understand how the dust and dirt moves on the Moon or Mars so that we can help understand the best ways to keep our astronauts safe and healthy when they go there.

1c. What is your hypothesis (an educated guess) on what you think will happen during your investigation?
- Summarize what you think you will happen.

Basic Example:

Our hypothesis is that when the confetti is released, it will remain grouped together in the center of the experiment since there is no other force like gravity to separate them.

Section 2: HOW do you imagine your experiment would work? What components and/or technologies might you need to make it run?

Note: Check out the NASA TechRise Plan Your Experiment Slide Deck (Suborbital-Spaceship) and the Explore Components Design Worksheet (Suborbital-Spaceship) for inspiration. Keep in mind that it is okay if you don't know how to use the components in this resource. You can think about the kinds of things these components do and how they could help you investigate your hypothesis.

2a. Describe what your experiment is (how will you test your hypothesis?) and how it would work during flight.
This section may include:
- How you would design your experiment to operate during flight and achieve your goals.
- How you would capture and analyze the results of your experiment to understand whether it worked and determine what you were able to learn.

Basic Example:

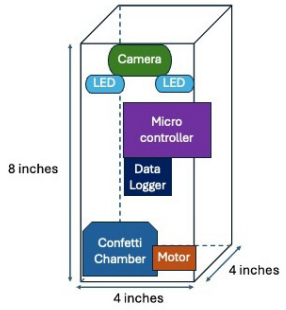
> Our experiment will have a chamber containing the confetti that opens once the suborbital-spaceship has reached reduced gravity. There will be a camera and lights to record video of the confetti during the flight.

2b. Provide a diagram of your experiment. Include the major components you would need and how they would fit in your 4x4x8 in. flight box. Describe how the components support your experiment.
Note: Check out the Explore Components Design Worksheet (Suborbital-Spaceship) for inspiration.
This section may include:

-Names of the components you selected from the Explore Components Design Worksheet (Suborbital-Spaceship)
-What the components would be used for (sensing, recording, etc.)
-Simple diagram showing how your components will fit in your 4x4x8 in. flight box

Basic Example:

> We will use the microcontroller provided in our TechRise kit to be the **'brains'** of the experiment so it can interact with the rest of our components.
>
> A camera and a light will be used to record video of the confetti for the entire flight. We will use a motor to release the confetti in microgravity.
>
> We will use the ***MicroSD Card Breakout Board*** we found in the TechRise components list to collect the video of the confetti so we can analyze the data after the flight.



All winning teams will work with our awesome TechRise advisors to finalize their design and learn (or refine) the engineering skills needed to build their experiment. The education resources on the challenge site help teams explore possible components and are a great resource for this section.

Section 3: WHY do you want to propose this experiment idea?

3a. Why is this investigation/experiment important to your team and your school?

Basic Example:

> This experiment is important to our school because we have never flown an experiment and want to learn more from NASA so we can form a science team, since our school does not have one. This experiment will teach us how astronauts will be affected by small particles in the air like Moon dust.

3b. What new knowledge or skills would your team gain by doing this project?

Basic Example:

> By participating in TechRise, our team would learn how to program/code, wire components, and assemble hardware.

3c. How is your experiment connected to one or more of the central parts of NASA's mission, as described below?

*NASA explores the unknown in air and space.
*NASA innovates for the benefit of humanity.
*NASA inspires the world through discovery.

Basic Example:

> Our experiment would help scientists understand how best to support astronauts, to better prepare them for their exploration of other planets.

Once complete, the Team Lead (Teacher or School Employee) can submit the final proposal at:
https://www.futureengineers.org/NASATechRise

HIGH-ALTITUDE BALLOON EXPERIMENT: BASIC EXAMPLE

Experiment Name

Please provide a name for your proposed experiment.

Basic Example:

Proposed Experiment Name: Pollution Experiment Technology (PET)

Section 1: WHAT is your team's experiment idea?

**Note: Check out the NASA TechRise High-Altitude Balloon Brainstorming Slide Deck for inspiration.

1a. What do you want to investigate?
- Explain what you plan to measure, monitor, or evaluate during the flight.

Basic Example:

We want to investigate how polluted the air is.

1b. How does your investigation help to explore space and/or study our home planet?
- Summarize any background research you have done.

Basic Example:

Air pollution is important to NASA Earth scientists because it can change our weather and hurt living things. We want to study pollution so that we can help understand the best ways to keep our planet safe and healthy for everyone.

1c. What is your hypothesis (an educated guess) on what you think will happen during your investigation?
- Summarize what you think you will happen.

Basic Example:

Our hypothesis is that if we go higher in the atmosphere, then there will be less pollution since it is further away from human-made pollution sources.

Section 2: HOW do you imagine your experiment would work? What components and/or technologies might you need to make it run?

Note: Check out the NASA TechRise Plan Your Experiment Slide Deck (High-Altitude Balloon) and the Explore Components Design Worksheet (High-Altitude Balloon) for inspiration. Keep in mind that it is okay if you don't know how to use the components in this resource. You can think about the kinds of things these components do and how they could help you investigate your hypothesis.

2a. Describe what your experiment is (how will you test your hypothesis?) and how it would work during flight.
This section may include:
- How you would design your experiment to operate during flight and achieve your goals.
- How you would capture and analyze the results of your experiment to understand whether it worked and determine what you were able to learn.

Basic Example:

Our experiment will have a pollution sensor and take measurements at different altitudes as the balloon lifts into the air.

2b. Provide a diagram of your experiment. Include the major components you would need and how they would fit in your 4x4x8 in. flight box. Describe how the components support your experiment.
Note: Check out Explore Components Design Worksheet (High-Altitude Balloon) for inspiration. This section may include:

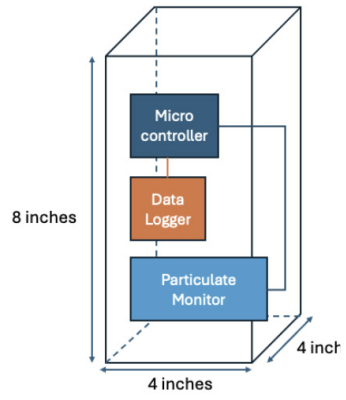
-Names of the components you selected from the Explore Components Design Worksheet (High-Altitude Balloon)
-What the components would be used for (sensing, recording, etc.)
-Simple diagram showing how your components will fit in your 4x4x8 in. flight box

Basic Example:

We will use the microcontroller provided in our TechRise kit to be the **'brains' of the experiment** so it can interact with the rest of our components.

We will use the *Air Quality Breakout Sensor* to detect particles in the air such as pollen, dust, soot, and smoke.

We will use the *MicroSD Card Breakout Board* we found in the TechRise components list **to collect sensor data** so we can analyze the data after the flight. It will be connected to the microcontroller.



All winning teams will work with our awesome TechRise advisors to finalize their design and learn (or refine) the engineering skills needed to build their experiment. The education resources on the challenge site help teams explore possible components and are a great resource for this section.

Section 3: WHY do you want to propose this experiment idea?

3a. Why is this investigation/experiment important to your team and your school?

Basic Example:

This experiment is important to our team because we want to learn more about pollution and how it will affect us in the future.

This experiment is important to our school because we have never flown an experiment and want to learn more from NASA so we can form a science team, since our school does not have one.

3b. What new knowledge or skills would your team gain by doing this project?

Basic Example:

By participating in TechRise, our team would learn how to program/code, wire components, and assemble hardware.

3c. How is your experiment connected to one or more of the central parts of NASA's mission, as described below?

*NASA explores the unknown in air and space.
*NASA innovates for the benefit of humanity.
*NASA inspires the world through discovery.

Basic Example:

Our experiment would help scientists understand how pollution travels and spreads in the atmosphere. This can show how pollution affects the air we breathe and the climate on Earth.

Once complete, the Team Lead (Teacher or School Employee) can submit the final proposal at:
https://www.futureengineers.org/NASATechRise