



2023-2024 RIPKEN FOUNDATION STEM CHALLENGE POWERED BY DEVON ENERGY

Objectives of the Competition

The annual Ripken Foundation STEM Challenge provides Ripken Foundation STEM Centers with an opportunity to participate in a national competition that uses real-world problem prompts to encourage youth to apply STEM skills and knowledge to develop innovative solutions. The real-world challenge topic for the competition changes every year. Youth at participating Ripken Foundation STEM Centers will have to design a creative solution to the problem, considering the scenario provided.

By competing in this event, youth learn valuable life skills, which include critical thinking, problem-solving, teamwork, and communication, as well as using resources efficiently.

We would like to thank Devon Energy for making the 2023-2024 Ripken Foundation STEM Challenge possible!



Competition Challenge Prompt

The 2023-2024 Ripken Foundation STEM Challenge presents one prompt for STEM Centers.

- **Prompt:** A local amusement park is looking to increase their visitor numbers and profits. They decided that unveiling an exciting new attraction is the perfect way to increase their ticket sales and get more visitors to the park. They specifically are looking to attract more families to their park, so the ride must be appealing to a wide range of ages. Their goal is to have the new ride ready to announce when the summer season arrives. They have asked for your help. Using your STEM Center materials, create and develop a prototype of an amusement park ride for the park to reveal at the start of the next summer season.



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Parameters:

- Your design must utilize at least **two** products from your Cal Ripken Sr. Foundation STEM Center
- Your design must include at least **one** of the following types of motion:
 - Rotary Motion
 - Linear Motion
 - Oscillating Motion
 - Reciprocating Motion
- Your design must include at least **one** of the following simple machines:
 - Inclined Plane
 - Wedge
 - Lever
 - Wheel & Axle
 - Screw
 - Pulley

Round 1: Proposal Submission	Round 2: Video Submission
<p>In Round 1, STEM Centers submit a proposal of their idea. The proposal should be a general outline of their idea and include:</p> <ul style="list-style-type: none">● A name for the ride/attraction● A theme● A marketing slogan or catch phrase. List of materials with the products and supplies the team plans to use in the prototype.● A description of the problem and how their design addresses the problem.	<p>Round 2 will consist of submission of a pre-recorded video presentation. Teams will create a video in which they provide a more in-depth “Pitch” presentation. It should include:</p> <ul style="list-style-type: none">● More details about their approach to solving the prompted problem and, also, show the physical prototype of the ride/attraction.● A presentation that is five to seven minutes.● A visual representation of the team’s idea to demonstrate/model during their pitch presentation.<ul style="list-style-type: none">○ This should be a working model, video, or anything to show the idea in action.○ The presentation should be thorough and more detailed than in Round 1 proposals.



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Round 3: Live Video Call	Round 4: Final Round
<p>Round 3 will consist of a revised video presentation. Teams will:</p> <ul style="list-style-type: none"> • Share their revised recorded presentation on a live video call with a judging panel. • Attend the live video call to share their revised video presentation with their working prototype and answer any questions related to their prototype. 	<p>Round 4 will consist of the top three final teams presenting their final prototype and presentation. Teams will:</p> <ul style="list-style-type: none"> • Present their working prototype in a live in a video call and/or in person. • Be given more details about Round 4 at a later date.

Awards

The top three finalists will receive a plaque to celebrate their achievement and the following prizes:

- **First place** – \$5,000 cash prize and a signed sports memorabilia item (valued between \$500-\$1,000).
- **Second place** – \$4,000 cash prize and a signed sports memorabilia item (valued between \$500-700).
- **Third place** – \$3,000 cash prize and a signed sports memorabilia item (valued between \$300-500).

Competition Rules

Participation

This competition is open to youth in grades 4 to 6 that participate in a Ripken Foundation STEM Center program. Submissions can be from individuals or small groups, with small groups encouraged. Teams can be comprised of 1 to 6 students. No more than 6 youth per team permitted. Individual Ripken Foundation STEM Centers can decide how to arrange their teams. Each Center will be able to submit multiple entries to Round 1 of the competition (see specific rules below for more information). The goal of this Challenge is for youth participants to apply STEM skills and knowledge. While we greatly appreciate strong mentors and teachers in supporting student inquiry during this challenge, this should remain a student-led project and promote youth leadership and learning.

Competition Timeline

September of 2023 – Competition guidelines released to all Ripken Foundation STEM Centers
 December 1, 2023 – Digital submissions for Round 1 due.
 December 20, 2023 – Teams selected for Round 2 notified.
 March 15, 2024 – Round 2 contest held via recorded video.
 April 12, 2024 – Round 3 submissions due for final review.



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May of 2024 – Round 4 final round presentations
May of 2024 – Winners announced.

Contest Specific Rules

The contest will be held in four rounds:

Round 1 – Proposal Submission

- In Round 1, STEM Centers submit a proposal of their idea describing the solution and how it addresses the problem.
- There is no limit to the number of proposal submissions that can be submitted in Round 1 from each STEM Center. (i.e., one center could submit four proposals. However, the proposals must be from four different teams with different students).
- Proposal submissions can be in video or presentation format.
 - Use the following methods to submit your Round 1 proposal: send a video, use PowerPoint, Google Slides, or Prezi presentation with audio.
 - If doing a video, the maximum length is five minutes.
 - Students are not required to appear on camera.
- At least five Round 1 proposal submissions will be selected to continue to Round 2.
 - If multiple entries are received from a STEM Center, only one team/individual from that STEM Center can move on to Round 2.
- Submissions are accepted via email to Andre Murphy amurphy@ripkenfoundation.org. He will pass along to one of our CRSF Senior STEM Education coordinators for review.
 - Please include your school/site name in the subject or body of the e-mail.
 - The submissions can be attached directly to the email or uploaded to a cloud-based hosting service such as Dropbox or Google Drive with a link included in the submission email.
 - Please contact Andre Murphy (amurphy@ripkenfoundation.org) if you need assistance.
- Round 1 proposal submissions are due **December 1, 2023**.

Round 2 – Recorded Video Presentation

- The teams selected for Round 2 will be notified in mid-December 2023.
- In Round 2, groups will create a more in-depth presentation. Teams will be expected to give more details about their approach to solving the prompted problem and, also, show the physical prototype of the solution.
- All Round 2 teams will meet with their Ripken Foundation contact in January 2024 to discuss, plan, prototype, and execute their presentation. Each team is expected to keep in touch with their Ripken Foundation contact throughout the remainder of the competition. Specific dates and times are to be announced and scheduled later.



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- Teams should have a visual representation of their idea to demonstrate/model during their presentation.
 - This should be a working model in the video to show the idea in action.
 - The presentation should be thorough and more detailed than in Round 1 proposals.
- All video presentations should be five to seven minutes.
- Round 2 will consist of a recorded video presentation with the working model submitted in March 2024
- If teams are greater than one, it is required that youth collaborate as a team on their submission (teams can be 1 to 6 people).

Round 3 - Video Presentation

- In Round 3, teams will meet with their point of contact from the Cal Ripken, Sr. Foundation to review their recorded presentations from Round 2.
- Teams will receive feedback at the beginning of Round 3 from their point of contact from the Cal Ripken, Sr. Foundation.
- Teams will share their revised recorded presentation on a 30-minute live video call with a judging panel.
- Teams will attend a 30-minute live video call to share their revised video presentation and answer any questions related to their prototype.

Round 4 – Final Round

- Round 4 will consist of the top three final teams presenting their final prototype and presentation live in a video call and/or in person.
- More information about Round 4 will be announced at a later date.

Judging Criteria, Scoring, and Prizes

Presentations are scored by a panel of judges. Each judge will score the presentations on a rubric. Judges will assign a point value for each category from one to five points. More information on the rubric and specific judging categories is found below. The overall team score is the total sum of all judges' scores. The highest scoring team will receive the first-place prize with respective prizes through third place for subsequent scores.

In the case of a tie, the tie will be broken with whichever team scores higher first in the "Overall Presentation" score, if needed, the "Final Product" score, and finally, the "Ability to Solve the Problem" score.

Round 1 Rubric Criteria

- Use of **Engineering Design Process or Scientific Method**



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- Did the team use elements of the Scientific Method or Engineering Design Process, including multiple trials, hypotheses, testing a prototype, etc.?
- Did the process get the idea to follow a logical flow?
- **STEM Principles**
 - Did the team incorporate Science, Technology, Engineering, and Math throughout the process?
 - Did the design utilize at least **two** products from your Cal Ripken Sr. Foundation STEM Center?
 - Did the design include at least **one** type of motion (Rotary, Linear, Oscillating, or Reciprocating).
 - Did the design include at least **one** of the following simple machines:
 - Inclined Plane
 - Wedge
 - Lever
 - Wheel & Axle
 - Screw
 - Pulley
 - Was the specific problem identified and addressed?
 - Does the problem connect with the given prompt?
- **Practicality of Solution**
 - Is the idea something that is feasible to create as a solution to this problem?
 - Is the design something that could be implemented as a solution to this issue?
 - Does the solution solve the problem?
- **Creativity**
 - Did the team display creativity in their design process?
 - Does the idea presented by the team display out-of-the-box thinking in its approach to solving the issue?
- **Overall Submission of Content**
 - Was the presentation organized with a logical flow?
 - Did the presentation cover all aspects of the challenge from the conception of the idea to the conclusion of how it will solve the problem?

Rounds 2, 3, and 4 Rubric Criteria

- **Use of Engineering Design Process or Scientific Method**
 - Did the team use elements of the Scientific Method or Engineering Design Process, including multiple trials, hypotheses, testing a prototype, etc.?
 - Did the process to get the idea follow a logical flow?
 - Did the team complete research on existing solutions to this issue?
 - Was the idea tested, refined, and redesigned to land on a final design?
- **STEM Principles**



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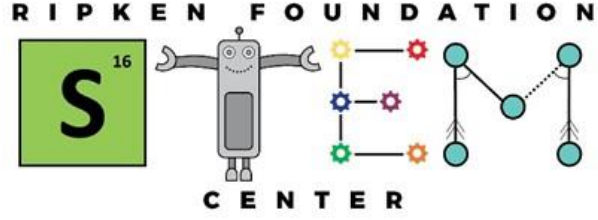
- Did the team incorporate Science, Technology, Engineering, and Math throughout the process?
- Did the design utilize at least **two** products from your Cal Ripken Sr. Foundation STEM Center?
- Did the prototype include at least **one** type of motion (Rotary, Linear, Oscillating, or Reciprocating).
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- Practicality of Solution
 - Is the idea something that is feasible to create as a solution to this problem?
 - Is the design something that could be implemented as a solution to this issue?
 - Does the solution solve the problem?
- Ability to Solve the Problem
 - Does the solution solve the problem?
- Creativity
 - Did the team display creativity in their design process?
 - Does the idea presented by the team display out-of-the-box thinking in its approach to solving the issue?
- Overall Presentation
 - Was the presentation organized with a logical flow?
 - Did the presentation cover all aspects of the challenge from the conception of the idea to the conclusion of how it will solve the problem?
- Teamwork
 - Did the team work as a group to deliver the presentation?
 - Did the team show evidence of group contributions throughout the competition process?
- Public Speaking
 - Was the presentation delivered with good principles of public speaking – good pace, good diction, confident tone, etc.? (Issues with connectivity will not be a factor.)
- Final Product
 - Did the team present a representation of a final product?
 - Did the product/concept provide a solution to the real-world issue presented?



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