Women In STEM Conference

STEM Competition

We are so glad your school will be attending the 3rd Annual Women In STEM Conference!

This year we will be hosting two student competitions, a car design and bridge design.

Each school can participate in one competition of their choosing. Teams should consist of no more than four students, and the projects should be constructed prior to arriving at the conference.

Designs will be judged by a panel and prizes will be awarded to the top scoring teams!

Both competitions will have design requirements and constraints to allow for fair evaluation. The design requirements and scoring criteria for both competitions are shown on the next pages.

If you would like to participate, please email Kristi Marshall at WISC@ardot.gov no later than **April 5th** your selected competition, team name, and student names.

Participation is voluntary.

LET'S HAVE SOME FUN!

If you have questions or need more information, contact Erika Simple or Josilyn Mitchell at

WISC@ardot.gov

Car Competition

Objective

Build a balloon, mouse trap, or rubber band powered car that will travel the farthest distance.

Design Requirements

- The car should be sturdy and not fall apart.
- The car must travel forward and straight for at least 2'.

Scoring Criteria

Teams will be evaluated and scored using the following criteria:

1. Presentation
   - Each team must prepare a 3-5 minute video presentation to introduce the team members, explain their design concepts, design process, and basic functions.
   - Videos must be submitted to WISC@ardot.gov by **April 5th**.
2. Creativity & Aesthetics
   - Points will be rewarded to teams who use materials that other teams did not use.
   - Teams who add visual and artistic designs to their cars will receive additional points.
3. Distance
   - If a car does not reach 2', then that team will not receive points.
   - Teams will receive an extra point for every inch their car travels over the 2' requirement.
4. Trials
   - Each team will get two trial runs for their car. This will allow each team to have a second chance to make up for any technical issues.

Bridge Competition

Objective

Design and construct a balsa wood bridge.

Design Requirements

- All materials shall only be commercially available balsa wood and wood adhesive (glue).
- Maximum bridge length of 30”; Maximum bridge width of 6”; Minimum clear span of 26”
- Bridge members must not exceed ⅛” square balsa wood sticks.
- Members of the bridge may not be laminated together. The allowable overlapping of one member to another is ½”. Parallel members will be glued only at their ends or where they come into contact with cross members. The minimum allowable spacing between parallel members is ⅛”.
- For testing, the bridge deck must have a ½” hole at mid-span. There should be no obstructions below the hole that would prevent the passing of the testing rod.
- The bridge may not be painted or coated with any material.

Testing

- A 1½” wide x 3” long x ½” thick loading plate will be positioned over the hole at mid-span and be placed directly on the balsa wood deck.
- A testing rod will fit through the ½” hole in the balsa wood deck and attach to the loading plate.
- The initial load will consist of an empty container suspended from the testing apparatus. Sand will be added to the container at a steady rate until bridge failure.

Scoring Criteria

The panel of judges will evaluate and score each team on the following categories:

1. Presentation
   - Each team must prepare a 3-5 minute video presentation to introduce the team members, explain their design concepts, design process, and basic functions.
   - Videos must be submitted to WISC@ardot.gov by **April 5th**.
2. Creativity & Design
   - Each team must present a diagram of their bridge, drawn to scale.
3. Efficiency: (Efficiency = mass supported/mass of bridge)