Optimized Bridge and Pitch Competition 2025

Sponsored by: The University of Tennessee, Heath Integrated Business and Engineering Program

Description: The objective of this competition is to build a bridge that balances both material cost and structural integrity. Competitors also give a 30-second pitch on their bridge design. Students are judged on how much weight it can hold at the midpoint of the bridge as well as additional points for the best pitch, which covers the reasoning behind the design and the optimization of the material cost of the bridge.

Materials and Construction: The bridge can be constructed out of popsicle sticks, rubber bands, tape, and string. Students will build the bridge on Engineers Day, and will be given 5 minutes to construct their bridge out of the materials provided. Each material is worth a cost value, and using more of each material will increase your cost value. The winner will be the bridge that holds the most weight with the least material cost value.

Pitch Competition: Contestants can also earn bonus points for participating in the pitch competition. Students will be given 30 seconds to pitch their bridge design. The goal of the pitch should be to introduce to the judges your bridge, the design you went with, and the overall material cost of the bridge. Participants can earn up to 6 points added to their final score from giving their pitch. HIBEP judges will subjectively evaluate students on their and communication of their overall design as well as the clarity and polish of their pitch.

Rules:

- All construction must be completed during the event.
- Material Cost Values:
    - Popsicle sticks cost 1 point.
    - Rubber Bands cost 2 Points
    - 6 inches of String costs 3 Points
    - 6 inches of tape costs 5 points
- Width – The bridge must be a minimum of two popsicle sticks and no wider than 4 popsicle sticks
- Length - The bridge must have a length of at least 10” and be no more than 14” (3.94”) from end to end
- Height – The height of the bridge below the loading surface may be no greater than 1”. There is no maximum on the height above the loading surface.
    - The loading surface is defined as the surface where weight will be placed by the judges to evaluate the loading capacity at the midpoint of the bridge.

Loading of the Bridges:

- The load point will be at the center of the bridge.
- The bridge will be loaded with a container filled with loose steel ball bearings. Bearings will be progressively added until either failure or maximum deflection occurs.

Scoring:

The winner will be determined by the bridge that holds largest number of bearings with the lowest material cost value. Points awarded from pitches will be added to the total number of loose ball bearings the bridge held.