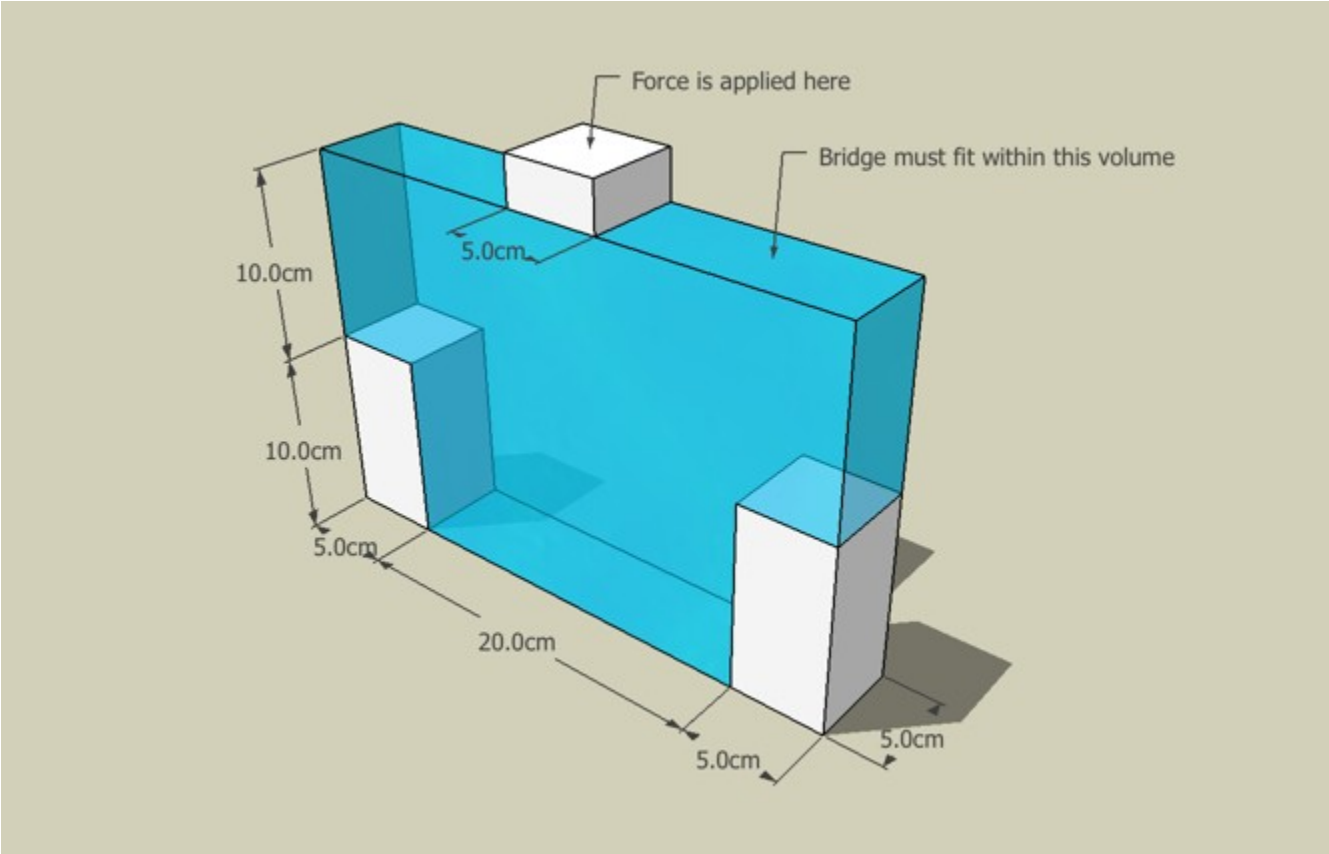
# CS 3651 Balsa Bridge Assignment
# Destructive Bridge Testing: Monday February 28th




# Materials

The only permitted materials are: 1/4" x 1/4" balsa, 1/8" x 1/8" balsa, CA glue and CA glue accelerator, and any of your own body parts that happen to accidentally stick to the bridge while you build it. You should not intentionally design your own body parts into the bridge. You must use "ordinary" thin CA glue. Materials sufficient for building a passing bridge will be provided in class. However you may augment the provided materials with those you purchase.

## Bridge size and shape

The bridge must rest on two 5cm x 5cm posts that will support it. The posts will be 10cm tall and separated by 20cm. The bridge may extend up to 9.999cm below the level of the posts, but no part of the bridge may touch the "ground" between the posts. No part of the bridge may be wider than 5cm. Bridges may not extend more than 10cm above the top surface of the posts.

# Strength assessment

Each bridge will be placed on the posts, then force will be applied to the bridge using a 5cm x 5cm plate centered between the posts. The plate will be initially located 10cm above the posts, then it will descend slowly. We will record the maximum force the bridge withstands. Recording stops when either: 1) Any part of the bridge touches the ground (including parts that fall off the bridge); 2) The owner of the bridge requests that the applied force be halted.

# Report

You must submit a 1 page written report with your bridge. The report should include: A drawing of your final design; Credit for design features that you borrowed from others; Rationale for your design; Where and how you think your bridge will fail. You will receive a score of 0 to 1.0 for your report (where 1.0 = 100%). Note that I expect most reports to receive a score of 1.0 as long as they include each of the required elements.

# Scoring

Your final score will be measured as Report Score * Strength / Mass. For example, if you scored a 90% (.9) on your report, your bridge weighs 20g (0.02kg) and it withstands 1N of force, your score will be .9 * 1 / 0.02 = 45 m/s^2

Grades will be assigned based on a curve of all scores such that no “acceptable” bridges will receive a grade below a “C” or 70%.

# Sharing design ideas & extra points

I encourage you to "leverage" good design ideas from others. I will award extra points to those who borrow others' ideas, and I will also award extra points to those whose ideas are borrowed. For each idea you borrow from others, you will be awarded an additional point (i.e. 0.01). For each person that borrows YOUR idea you will be awarded two points (i.e. 0.02). In total you can win up to 5 points by borrowing ideas. There is no limit to how many points you can win by having others use your ideas. These points are added to the report score before the final scoring is calculated.