**Spaghetti bridge
scoring guide**

**Bridge Performance and specifications: / 60pts**

Bridge crosses a span of 60cm. Is a minimum of 15cm wide and has a passage that would accommodate a 15cm tall traveler.
Craftmanship.
The bridge efficiency will be evaluated based on a ratio comparing amount of weight supported compared to weight of the bridge**. The A+ (100%) level will be determined by the best bridge. A minimum level for 75% will be determined later.** Bridge will hold a load suspended below the bridge held by a strap spanning the bridge once. The placement of the strap will be determined by the bridge designer.

While designing the bridge spaghetti will be used to create 1/3rd scale models to be tested. Many small scale iterations can be made as desired for testing your designs. Only 1 full scale bridge will be made out of balsa wood and tested for a grade. The full scale model weight:load ratio will be used to determine the grade, the spaghetti models will only be used for experimenting.

**Notebooks: / 40pts**

**Experimental notebook: /20pts**
This will be the notebook that chronicles your actual bridge building experience, your observations, inferences, plans, successes and failures. I will be looking for: specific observations, appropriate thought responses to observations, plans for new bridges. In short I am looking for testing and thoughts about testing. ADDITIONALLY I will be looking for you to make references to your research notebook. I strongly recommend referencing page numbers between the two notebooks. For example: What you saw = I will research this more thoroughly please see page \_\_\_\_ in research notebook. A good experimental notebook should allow me to follow each step you made while designing each new bridge iteration as well as WHY you chose to make those decisions.

**Research notebook: /20pts**
This notebook is also set up in the column style (three columns, the new column will be the margin and will be used to keep track of your sources). I will be looking for reasons why you are research the topic, ideas on how to utilize them in your experimentation, and understanding of scientific concepts and engineering principals. ADDITIONALLY I will be looking for you to make references in your experimental notebook. For example: “This is a structure/idea I would like to try, please see page \_\_\_\_ in experimental notebook to see how I have done this and its results.”

**Paper: / 100pts**

The paper will be assessed on 4 separate but related areas, it can be written as a single continuous paper or it can be broken up into separate sections:

**Experimental Process: /25pts**
what was learned about running an experiment, about making observations and inferences, about forming procedures and changes based on those thoughts. How did the product develop and what did you learn about running an experiment. What were obstacles in actually performing the experiment in the time spots given. How could you improve on those hardships the next time you run an experiment. What does experimenting offer that other kinds of learning cannot? What changes did you make while running these experimentations that were improvements from the card house challenge. How did your approach to the experiment change as you progressed through your iterations. What was the “marshmallow” of this challenge? Did it change? Why/not and how? How did identifying your marshmallow as you worked help you? or did not identifying the marshmallow cause you problems, why/not?

**Research Process: /25pts**
How did you decide what to research? What guided the research after you got started? What kind of information did you find most useful? How did you combine multiple ideas into usable content? What methods did you use to make sure your research had an effect on your experimenting? When you came across information you didn’t understand how did you work to comprehend it? Other thoughts that you found to be relevant and important for the researching process.

**Specific Science Content learned through the experience: /25pts**
 geometrical structural efficiency
 common engineering information
 etc etc etc (I leave the list short because I want you to figure out what is relevant on your own)
 **impress me, show me you learned science content as well as process during this lab.**

**Reflection on the notebook process: /25pts**
Recording our work is central to the scientific process. Reflect on your recording process. How did it help you work and learn? What were some of the short coming of the way you recorded your experiment? How can you improve upon it next time? How did keeping track of your research along with your experimental work affect each other? How did keeping track of your specific thoughts on research focus your process and your experimenting? Etc etc other relevant information about note booking.

**Total: / 200**