GEORGIA INSTITUTE OF TECHNOLOGY
George W. Woodruff School of Mechanical Engineering
ME 2110 - Creative Decisions and Design, Spring 2019
Studio #1 – Tower Construction

Assigned: Week 1 (in studio) Due: Week 2 (at the start of studio)

Studio Description: This week you will work in groups of three to four students to build a tower with the objective of maximizing height and under the constraint of holding a load. The goal is to build the highest tower in the class that can support a golf ball at its top. You are provided with the following building materials: 2 boxes of spaghetti, rolls of tape and a golf ball. The assignment will consist of two trials as described below. Each tower is to be based in a 12-inch by 12-inch square area on a table. Each group will mark out its own square with tape. The tower is to be based and attached only to the top of the table within the square. You will be responsible for cleaning up, including the removal of all tape. You will also need to build the bracket to mount the golf ball to your tower out of the materials provided. You are limited to one box of spaghetti per tower.

Trial 1: You have 45 minutes to make a tower using only the spaghetti from one of the 8 oz. boxes and the tape. You should spend 15 minutes planning your tower (not building) and 30 minutes building it. *Do not start construction of your tower during the 15-minute planning period.* After 45 minutes, the instructor will measure the height of each tower. Height will be measured from the the table to the highest point on the ball. After your instructor has recorded its height, you will have 10 minutes to make any notes, take pictures and clean-up your first tower.

Trial 2: This is a repeat of Trial 1 under the same conditions described above in terms of time and materials to be used. Now you have some understanding of what worked and didn't work in your first approach and can undergo a design iteration to explore and/or refine your team's approach. You may not reuse the materials used or left remaining from the first trial.

Deliverable due at the end of this studio: A draft report (one per team) following the guidelines described below. This is to be reviewed and critiqued by your instructor and TA with your team in studio. In this report, you should (i) briefly restate the goal of the study, the aspects of the problem and its requirements and materials used/given, (ii) describe the approach taken, (iii) describe the results and (iv) describe future modifications that can be taken to improve results. In describing the approach taken and results, you will need to generate figures that communicate your design. These should have adequate labels to support textual descriptions you provide. Comment on relative performance compared to that of your section. Use technical wording where possible.

Deliverables due at the beginning of studio next week: An updated report (one per team) that takes into consideration the comments provided to you by your instructor and TA.

Report Guidelines: The summary should be a maximum of one page in length, using 12-point font, 1-inch margins and single-spaced. A cover page should be provided and is not included in the page limit. Figures/tables should be attached on subsequent pages and are also not included in the page limit. Figure captions should be provided for all figures and go below the figure. Table captions for any tables are to be placed above the table. Figures and tables must be cited in sequential order in the text and all figures/tables must be cited. Use page numbers at the bottom of each page. See the textbook for further guidelines on proper formatting and writing style for reports and technical writing. All reports should be uploaded to Canvas before the deadline.