Important Deadlines

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Reports are due at 12:30pm at Ms. Aloma’s office (CSE Department – EB1-256). No late reports will be accepted.

Project Overview
As a team you need to work on the project below. You are not allowed to select your own projects. You need to develop the design, write a technical report, and present the findings. A prototype model should also be built and demonstrated.

Project Evaluation
The criteria for evaluating your project will be (1) application of teaming skills, (2) technical background, (3) level of analysis and details, (4) creativity and innovation, (5) final report, (6) oral presentation, (7) model and a demo.

Progress Report
Once you have chosen a name for the team and assigned roles among the different team members (team leader, team coordinator, recorder, time keeper, encourager, etc.), you are expected to update your instructor on the progress of the project. This updating is usually handled by a progress report, which is limited in this course to 3 pages. Progress reports should include:

- Background of the project itself
- Discussion of achievements so far
- Discussion of problems that have arisen
- Discussion of work that lies ahead
- Assessment of whether you will meet the objectives of the project
- Gantt chart using MS Project for the design project.

Final Report
Your technical report must include 10 steps of an engineering design as follows:

- Cover and title sheets, abstract, table of content, and list of figures and tables
- Chapter 1 – INTRODUCTION (identification of need and definition of problem)
- Chapter 2 – BACKGROUND (search for solutions, constraints, and criteria)
- Chapter 3 – ANALYSIS (alternative solutions, analysis of each solution)
- Chapter 4 – RESULTS (choose best solution, specification)
- Chapter 5 – CONCLUSIONS (conclusions, recommendations, future work and discussion of the Gantt chart)
- Appendix (code of cooperation, agenda and minutes of all team meetings during the design)

Presentation
Each team will present the design using PowerPoint or flash. Ten minutes will be given for each team. All team members must participate in the presentation. Hard copies of the presentation must be included with the final report.
**Project Idea**

Design a mechanical sorter system that will sort ping pong balls into three different classes based on their weight, i.e. heavy, medium and light.

**Project Rules**

- You can use Only any of the following materials in your mechanical sorter system:
  1) Card boards
  2) Papers
  3) Tape
  4) Glue
  5) Staples
  6) Rubber bands
  7) Toothpicks
  8) Plastic
  9) Springs

- The sorter system should distinguish between nine ping pong balls: 3 heavy, 3 medium and 3 light and place them in 3 separate trays.
- The heavy ping pong balls are made from normal ping pong balls fully filled with water. The medium ones are half filled with water and the light balls are not filled.
- A syringe can be used to fill the ping pong balls with water.
- The sorter system should have one input point to receive all nine balls and three outputs for each class of the ping pong balls.
- Each output should be marked clearly if it is for heavy, medium or light ping pong balls.
- The balls will be stored in a cylinder open from both sides and then will be released all together.
- The judges will use the “same” random order of the 9 balls among all groups when testing the designs during the competition. The random order will not be announced earlier.
- Each group will have a second chance to sort the balls if the system could not properly sort all 9 balls in the first chance. The group can use another model or the same model for the second trial. However, only systems that successfully sort the 9 balls from the first chance will be eligible for winning the competition.
- **The design system must sort all 9 balls.**
- The winning system is the one that has the lightest weight.

**Violating any of the above rules, will lead to significant loss in project grades.**

**Project Points**

The project is worth 15 points: 7 points for the presentation, 1 point for the progress report, and 7 points for the final report. In case the demo fails to meet the project rules, the project grade will be significantly penalized.

**Project Competition**

There will be a competition at the end of the semester for the best platform. The winning group will receive cash prizes and certificates. The winner is the group whose sorter meets the above constraints with the minimum weight.