Final Project

Task:
Your team must reflect on all of the past mechanisms and subsystem designs in order to create a robot to score soda cans in a basket as quickly as possible (or an alternate competition described by your instructor). Although this is a timed event, you will also be competing against an opposing team on the playing surface. The activity is clearly outlined in Unit 17, Systems Integration. In addition to the planning, construction, and competing with your robot, your team will be responsible for developing a slide show presentation that documents the engineering design process that you use. The criteria for the presentation is outlines below.

Competition (Unit 17) Presentation Criteria:
Use the following statements to guide your presentation:

You will be required to document (electronic presentation) all of the components of the engineering design process as described in Unit 3. As you will recall, the engineering design process consists of the following components:

1. **Identify a need** (What exactly needs to be done for this challenge?)

2. **Define the problem to be solved** (Specifically what types of problems are you going to encounter during the obstacle course and how will you overcome them. Make a list of objectives and rank them in order of importance.

3. **Conduct research** (What type of parts or components will help you achieve your task. Think of gear ratio, possible extensions to, add on’s, how many motors, etc. Look back or ahead at robot designs that will give your group a variety of ideas.

4. **Analyze the possible solutions** (Brainstorm as a group and come up with several ideas (at least 3) possible designs to meet the needs of the obstacle course. Weigh the pros and cons of each design. At the end of this process choose a design and explain why you chose it over the other possibilities.

5. **Design, test, and evaluate the best solutions** For testing and evaluating you will preform several trial runs and record information as well as any modifications you have to make to your design. You will explain in detail how you modified your robot to get the best product possible.

6. **Build** (Illustrated via photograph.)
   ♦ Pictures need to be taken of all the different sections of the robot at various stages of the build.
   ♦ Use Google SketchUp to create a 3d rendering of your robot. This will be printed off and placed in your portfolio and marked for accuracy and neatness. These drawings should also appear in your presentations.

7. **Communicate** (Using Presentation Software)
Presentation Logistics and Assessment:
- Presentation to include an Introduction, Conclusion, and References
- Presentation Duration (20 minutes; presentation and questions)
- Everyone in the group must take part in the presentation

Portfolio Assessment: (Due on the day of the presentation.)
As part of your assessment you will hand in a portfolio which contains the following items:
- A 3d sketch of your robot
- A daily log of work accomplished, with title page. (the daily log should be neat and well written, with a daily account of what everyone in the group did that day, such as, who worked on what part of the robot, who worked on the sketch of the robot, who took pictures of the robot, if the team tried something and it did or did not work, ect...)
- Final inventory (will be checked for accuracy)
- Final Peer Evaluation (will be handed out)

The Challenge
The challenge will be to collect the most points as possible. There will also be points given for completing challenges throughout the course as well as for finishing with the best time. The course as pictured below, will consist of a drag race, a hill clime, a weight push, and an object to retrieve. Best of luck and have some fun :)