ME 101 Design Project

Project is adapted from Ryan Hutcheson, Missouri University of S&T

Objective:
Your team will build a system that takes potential energy from an elevated weight and supplies energy to move a softball as far as possible in a specified direction. The distance measured will be from the starting point to where the softball first hits the pavement or comes to rest if the softball does not touch the ground. For example, a transport vehicle/device can be used for the softball.

Project Phases
1. Design the system using concepts from class and your own research (analysis of the design and justification of key components is required).
2. Build/Construct your design.
3. Test the system to prove your design.

Rules and Specifications
1. No other external energy sources can be used.
2. Testing will occur outside so be sure to take into account the elements.
3. All aspects of your design must be safe. The instructor has the right to disqualify your device if it is judged to have safety issues.
4. During testing, no team member can be within 0.5 m of your device.
5. You have four minutes total to test your device.
6. Your team is responsible for transporting and storing your device.
7. The elevated weight is approximately 5 kg and will be elevated 1 m.
8. The softball and device must be below the elevated weight to insure that their potential energy does not affect the total distance.
9. Your device must fit completely in a 1m x 1m x 1m cube.
10. Purchased materials shall not cost more than $50 dollars total. You may scavenge parts from other equipment, but you must include a realistic estimate of the cost in that case. All costs are borne by the team members.
11. Bouncing of either the softball or transport vehicle will not be considered as additional distance.
12. Energy from the dropping weight may be converted and stored within the device.

![Diagram of weight and device]
ME 101 Team Member Evaluation Form

This evaluation of team members is an opportunity to express who was an active/cooperative part of your group work. Please be consistent when evaluating team members. This is to be submitted to the professor by each individual and responses will be kept confidential.

Device Name:_______________________  Section Number:_____  Team Number:_____  

<table>
<thead>
<tr>
<th>Label</th>
<th>Team Member Name</th>
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<tbody>
<tr>
<td>A (yourself)</td>
<td></td>
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<tr>
<td>B</td>
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<tr>
<td>C</td>
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<td>D</td>
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<td>E</td>
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<td>F</td>
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1 – Never  2 – Rarely  3 – Sometimes  4 – Usually  5 – Always

Using the scale above, please rate each statement/question below as it pertains to each team member.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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<tbody>
<tr>
<td>Has the member attended group meetings?</td>
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<td>Did the member notify a teammate if he/she could not attend a meeting or fulfill some other responsibility?</td>
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<td>Has the member attempted to make contributions to team discussions/meetings when possible?</td>
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<td>Did the member cooperate with the group effort?</td>
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<td>Did the member express enthusiasm/interest in the project?</td>
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Overall Rating: Insert one of the words from the table below for each team member’s overall rating.

A: ____________________________________  D: ____________________________________
B: ____________________________________  E: _________________________________
C: ____________________________________  F: _________________________________

Excellent: Consistently went above and beyond, carried more than his/her share of the load.
Good: Consistently did what he/she was supposed to, acceptably prepared and cooperative.
Ordinary: Often did what he/she was supposed to, minimally prepared and cooperative.
Deficient: Sometimes failed to show up or complete tasks, rarely prepared.
Unsatisfactory: Consistently failed to show up or complete tasks, unprepared, almost no participation.
No Show: No participation at all.
ME 101 Team Presentation Evaluation Form

Device Nickname: ________________________________

Section Number: ___ Team Number: ___

Team Members: ____________________________
____________________________
____________________________
____________________________

Visual Aids (Slides) _________/3 points
Organization _________/3 points
Delivery _________/3 points
Team participation _________/4 points
Technical merit _________/3 points
Overall quality _________/5 points

Total _________/20 points