Design Challenge – Prosthetic Hand

Scenario
You are working with a team of engineers from a biomedical engineering company that specializes in the design and manufacturing of prosthetic devices. Your team’s challenge is to design a prosthetic hand that can perform ONE function to help improve the quality of life of the amputee who uses the prosthesis.

Example functions to design for:
- holding a pen or pencil
- clapping
- using sign language
- throwing
- brushing teeth
- picking up an object
- holding a utensil
- eating spaghetti

Design Constraints
- **Time:** You will be expected to complete this design challenge from start to finish in a matter of weeks! Therefore, it is important to agree on a design that is functional, yet not overly complex.

- **Materials:** The materials available* to you are listed below:
  - foam core
  - balsa wood, Plexiglas
  - wooden dowels
  - metal rods
  - springs, rubber bands
  - adhesives, such as epoxy, super glue, hot glue
  - sander, saw, drill
  - fasteners, such as eye hooks
  - wire, string
  - laser cutter (requires SolidWorks application)
  
  *You are permitted (and encouraged!) to use materials not on this list as long as you explain the purpose for doing so. Please see the instructor as the need for additional materials arises.

- **Project Deliverables:** (for 50% of course grade)

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<thead>
<tr>
<th>Deliverable</th>
<th>Points Assigned</th>
<th>Assigned Date</th>
<th>Due Date</th>
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<tbody>
<tr>
<td>Background research</td>
<td>150 points</td>
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<tr>
<td>Preliminary sketches and materials list</td>
<td>100 points</td>
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<td>Progress report</td>
<td>50 points</td>
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<tr>
<td>Design portfolio</td>
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<td>Final prototype</td>
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<td>Class/expo presentations</td>
<td>100 points</td>
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