Description of Project

I. General Description:
   Yearly catapult competition that invites teams of Iowa high school students to design and build their own trebuchet-style catapults to compete for distance and accuracy during the VEISHEA celebration.

II. Purpose and Relationship of Objectives to Tau Beta Pi:
   Encourages youth interest in the engineering fields and fosters the standards of professionalism and safety valued in engineering.

III. Organization and Administration:
   In years past, the catapult competition was open to catapults of all designs, and these catapults hurled water balloons at a cardboard box wall with the intention of knocking it down. However, the format was greatly improved upon this year.

   Because of safety concerns regarding the use of garage door springs and other devices in past catapult designs, this year’s designs were limited to trebuchet-style catapults, which derive their launching energy from a falling mass. Because the wind presented problems with the box wall target last year, it was replaced with a solid wooden target featuring a bullseye. In addition, because of the variability inherent in water balloon size and shape, and the tendency of water balloons to burst randomly, the objects being thrown at this year’s competition were grade A large eggs. These were selected both because of their more uniform size and shape and because it was determined that eggs launching through the air and exploding against a massive wooden target would definitely excite audience members!

   The details regarding the organization and implementation of this large project may be examined in the newly updated project officer binder or in the attached documents. The following subsections present a brief overview of the planning committee (titles and duties) and a short description of the actual competition.

A. COMMITTEE BREAKDOWN
   • Coordinator: Organized schedule of tasks, led committee meetings, handled contact with competing schools, made sure everyone got their work done.
   • Fundraising (2): Compiled a list of area businesses and coordinated fundraising efforts.
   • Webmaster: Put together an informational website, including pictures from last year’s competition, our official rules booklet, a map to the competition site, and an electronic entry form.
   • T-Shirts: Developed a t-shirt design and coordinated our t-shirt order.
• **Safety**: Acquired safety goggles, hardhats, boundary stakes, and other relevant items.

• **Materials**: Acquired all necessary building materials, arranged for egg donation from Hy-Vee, handled selection and ordering of prizes.

• **Documents**: Composed final versions of all documents, including invitations, official rules, entry forms, and pamphlets.

Our committee included 8 individuals. This breakdown of committee roles provided a general structure but was by no means rigid. Other tasks that didn’t quite fit into the role descriptions were simply doled out according to who was best equipped to handle them at a given time.

**B. COMPETITION DESCRIPTION**

Competing teams were scored based on two components:

1) An engineering-style report that described important facets of their design, such as their general design process, any calculations used, a discussion of safety issues, and a list of parts and prices. This was submitted prior to the competition date and worth a maximum of 50 points.

2) Their performance during the actual competition. Teams selected from four different launching distances: 60, 80, 100, and 120 feet. These distances were worth 4, 6, 8, and 10 points, respectively, per bullseye hit during competition. If a team hit the target outside of the bullseye, it received half the points, and if it missed completely, it received zero points for that shot. Teams were each given three practice shots and five scored shots. It was intended that the teams would make an engineering decision when selecting the distances around which they would design their catapults, weighing the benefits of longer distances earning more points against the likelihood that their catapults would actually hit from so far away. This component of the competition was worth a maximum of 50 points (5 bulls-eyes from 120 feet away).

Winners of the competition were selected according to their total scores out of a possible 100 points. In addition to the main 100 points, teams that incorporated some sort of theme into their catapult designs earned an extra +5 points.

A major facet of the catapult competition was emphasizing the safety importance of real engineering projects. Therefore, both in the report and the competition day scoring, safety documentation and observance played a large role in the determining of final scores.

One extra item included in the 2002 competition was the offering of two $500 scholarships for graduating seniors who will be attending ISU in the fall to study engineering. This year’s winners were Joseph Schuette and Tina Happel, both of Washington High School in Cedar Rapids. The scholarships were generously donated by Dean Melsa through the College of Engineering.

We also invited the juggling team to share our VEISHEA location this year.

**IV. Cost and Personnel Requirements:**

Building Supplies: $115

Printings & Mailings: $100

T-shirts: $345

Awards: $60

VEISHEA fees: $65

Scholarships: $1,000

Committee Members: 8 (+1 “Squeegee Boy” who squeegeed off the target between shots)

**V. Special Problems:**

First of all, this project deals with high schools, meaning that both the students and the administrators involved are notoriously undependable. For example, when we mailed out the initial invitations to participate, we enclosed pre-stamped cards on which our return address was already printed, so teams who wanted more information could simply fill in their contact information and drop it back in the
mailbox. We received more blank cards in response than cards on which administrators added their contact information, meaning we had no idea who they were from!

Secondly, our scoring procedure for the actual competition needs to be overhauled for next year’s competition, as only two scored shots actually struck the target, resulting in too many teams receiving zero points for the performance half of their total scores. This meant that the winning teams were awarded more for their reports than the actual presentation of their catapults. Therefore, the catapult committee is considering several possible schemes for awarding points based on shots that “come close” to hitting the target, which will hopefully result in better scores overall. (And honestly, our own demonstration catapult wasn’t much more accurate...)

VI. Over-all Evaluation/Results:
The 2002 Catapult Competition was fairly successful. Five teams participated, representing a fairly wide smattering of Iowan high schools. Despite (or perhaps because of) being situated directly between the drum line presentation and the martial arts demonstrations, two very popular VEISHEA acts, we received a significant amount of attention, with most passers-by stopping to view at least a couple egg launches. We earned gasps, oohs, aahs, and numerous compliments from both the crowd and the participating teams, and we’ve already devised plans to make ourselves even more visible and create more audience involvement at next year’s competition.

VII. Additional Info/Attachments:
Committee Members: Brian Crawford, Joe Hansen, Randy Mathison, Renee Esser, Noah Forlines, Tim Johnson, Matt Determan, and Ryan Dahlby.

Squeegee Boy: Brendan McMenomy

Website: http://tbp.eng.iastate.edu/projects/catapult_home.htm

Attached: Invitation, Official Rules, Entry Form, Scholarship Application, Tri-Fold Brochure, Judges Score Sheet, Competition Day Schedule, Pictures.
The Iowa State University Chapter of Tau Beta Pi

Invites you to participate in the

Fourth Annual Catapult Competition

What: Catapult Competition (launch an egg and break it on a target)

Where: Contest will be held on the Iowa State University campus in Ames, IA

When: VEISHEA Saturday, April 20, 2002

Who: Teams of 4-8 high school students and at least one teacher/parent advisor

Why: To involve high school students in a fun engineering project that includes designing, building, and analyzing a catapult, along with many EXPLODING eggs!

More Information: E-mail catapult@iastate.edu or contact Brian Crawford, Project Officer, at bcraw4dk@iastate.edu or 515-572-8024.
Dear Sir or Madam,

I am writing to invite you and your students to participate in a catapult competition that is sponsored by the Iowa State University chapter of Tau Beta Pi, the national engineering honors and service society. In addition to recognizing the academic success of our members, we are also a service oriented organization.

The competition is to be held on the ISU campus in Ames during VEISHEA, our spring celebration, on April 20, 2002. Tau Beta Pi’s annual catapult competition was created four years ago from a Greater Interest in Government Grant sponsored by our National Headquarters. In 1999, Tau Beta Pi started what we hope to be a long tradition of hosting a catapult competition for High School students. Each spring, teams of high school students, with the help of teachers and/or parents build a catapult that can hit a target from up to 120 feet away. The teams bring their catapults to campus over VEISHEA weekend to compete, where they are judged on an engineering style written report in addition to the function of their catapult.

The objective of this project is to promote engineering as an exciting field for young people, encourage teamwork, and assist in education outside of the classroom. In addition, bringing students to campus during VEISHEA is an excellent showcase for the engineering college and for the university as a whole.

Some of the highlights of the Catapult Competition include:

- Utilizing the design of a catapult as a practical application of ideas taught in the classroom, including - projectile motion, energy conservation methods, and material property considerations.

- Guiding your team through the engineering process of planning, design, cost analysis, safety review, building, testing, and final report writing.

- Building a versatile catapult that can SPLATTER eggs against a target a variable distance away.

- Competing against other innovative high school teams.

- Exposing your students to a great Iowa State University tradition the Saturday of VEISHEA includes a parade, departmental open houses, club displays, games and much more. It is a great opportunity for students to experience ISU.

I hope that I have kindled your interest in this competition. If you wish to receive a rulebook and entry form please return the enclosed pre-addressed note card by the end of January. If you have additional questions please e-mail me at catapult@iastate.edu, or contact Brian Crawford, TBP Project Officer, at 515.572.8024 or at bcraw4dk@iastate.edu.

Thank you for your interest

Tim Johnson
General Rules Overview

Purpose:
- Design a catapult to hurl raw eggs at target

Basic design specs:
- The catapult must attain all launching energy from a falling mass design (no springs, rubber bands, etc allowed)
- The largest disassembled dimensions must be no larger than 4' x 6' x 3'. The fully assembled size may be bigger, but it must fit disassembled in the allotted space.
- Total cost must not exceed $200.
- Materials should be no more than what is available at a typical lumberyard
  - Weldments, brazing, or custom machined members are not accepted.

Judging criteria:
- The team will select an initial distance of 40’, 60’, 80’, or 100’ based on capabilities of the catapult design.
  - Teams will receive more points for attempting larger distances.
  - During competition, the team will be randomly placed up to 5' from the selected distance category. The catapult must be able to adjust for target distance variances of 10’.
- Points will be awarded according to where eggs hit the bullseye target.
  - During the competition each team will be given several practice trials before attempting scored shots.
- A tension reliever and remote triggering switch are required to be able to unload the catapult after it is prepared to shoot.
  - Other considerations for safety i.e. safety stickers, safety stops will be rewarded.
- In addition to competing, teams will need to submit an engineering style report detailing design, theory, calculations etc. on the project. The report will be judged in a manner similar to a professional engineering document.
- Bonus points will be awarded to teams who choose to incorporate a theme. This could involve things such as costumes or decoration of the catapult.

Entry fee is $25 per team of 4 or less, $5 for every participant over 4.

If more information is desired, the official rules, when released, can be mailed if a request from your team is placed before the end of January.
What is Tau Beta Pi and What does It Represent?

Tau Beta Pi is the National Engineering Honor Society. The members of Tau Beta Pi are not only the top students in their graduating class, but they also participate in community service activities.

The Iowa Alpha Chapter at Iowa State University has been recognized nationally for the service projects that it has organized. The catapult competition was designed to reach out to high school students who have an interest in mathematics, physics and engineering. The competition gives students an opportunity to apply theory to a project that is both fun and challenging.

1. Quick Glimpse of the Challenge

The object of the catapult competition is to promote engineering as an exciting field for young people, to provide a service to society, to encourage teamwork, and to assist in education outside of the classroom.

Teams must design catapults to launch raw eggs a specified distance. The catapults will be designed and built by the teams. Each team must provide all materials and use their creativity and imagination in their designs.

The playing field will be a rectangular shape. The teams will set up their catapult in a designated launch area and will launch the eggs at a bull’s eye target on the opposite end of the playing field. The catapult range must be adjustable because each team will be shooting from different distances to the target. The exact distance to the target will not be known until the time of the launch. A range of distances will be specified in this document. Each team will get three practice shots and five scored shots. This field competition will count for 50 of the total 100 possible points.

In addition to the catapult, an engineering based report will be submitted. The report will include calculations of predicted distances, documentation of the design process, and a list of materials used, among other things. The report will count for 50 of the total 100 points available in the competition. This document should be of professional quality and demonstrate the groups’ understanding of the principles involved.

Upon the completion of this challenge, the members of each team will receive T-shirts. The winning team will also receive an award for display at its school. An extra benefit of the competition is its presence at VEISHEA, the largest and oldest student run celebration
in the United States of America! This year, VEISHA and the catapult competition will be held on April 20, 2002.

2. Rules of the Game

2.1 Teams

Teams will consist of a minimum of four students (recommend no more than eight) and one advisor. A student is someone who has not yet graduated from high school. An advisor may be a teacher, principal, parent, or guardian (anyone who is an adult and willing to take on the challenge and responsibility).

2.2 Field and Target Description

The competition field will be a level, rectangular field. The target is an 8’x 8’ platform inclined at a 45° angle. The bull’s eye will be in the center of the platform and be 4’ in diameter (see Figure 1). The launching areas are described in section 2.4.

![Figure 1 Target]

The distance to the center of each launching area will be measured from the center of the bull’s eye. There will be four launching areas for the teams to choose from: 60’, 80’, 100’ and 120 feet from the target (see Figure 2).
2.3 Launching Site

The launching sites will be rectangular areas that measure ten feet long by twenty feet wide. Each team will announce the launching area they wish to attempt at the time of the competition. A team member will then draw a random distance, zero to ten feet, out of a box and that distance will be measured from the front of the launching rectangle. All eggs will then be launched from this distance. The catapult’s datum will be the most forward ground brace (see Section 3.8). As an example, a team may choose the 60-foot launching area. The random distance they draw from the hat will then place them anywhere from 55-65 feet from the target’s bull’s eye.

2.4 Eggs

Tau Beta Pi will supply all eggs used in the competition. They will be grade A large eggs.

2.5 Practice Shots

Each team will be allowed three practice shots from the drawn distance. These practice shots must be carried out within the 30 minute time constraint (see Section 2.8)

2.6 Scoring Shots

Each team will have five scored shots. Points will be awarded for eggs that hit the 4’ diameter bull’s eye as well as shots that hit the 8’ x 8’ target platform.
outside the bull’s eye. The points awarded will also depend on the launching area the group has chosen (see Table 1).

<table>
<thead>
<tr>
<th>Table 1 Scoring Scheme</th>
<th>60’</th>
<th>80’</th>
<th>100’</th>
<th>120’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bull’s eye</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Strikes platform</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>outside the bull’s eye</td>
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<tr>
<td>Miss</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

To obtain the maximum score of 50 points, a group must choose the 120’ launching area and strike the bull’s eye with every attempt. Each group must therefore consider their catapult’s ability and make an engineering decision on which launching area to attempt.

2.7 Time Constraint

From the time of the drawing, each team will only be allowed thirty minutes to place their catapult, launch three practice shots if desired, launch five scoring shots, and remove the catapult from the field. Catapults may be assembled before the thirty-minute countdown begins.

3. Construction Constraints

3.1 Initial Size

The size of the catapult must be no greater than 4’x 6’x 3’ when disassembled; in other words, it should fit inside a box of these dimensions. This will be tested by judges on competition day! On competition day, a team may bring its catapult disassembled for size testing and then put it together to form a final unit larger than the stated dimensions. While there is no weight constraint, teams should keep in mind that the catapult will need to be transported some distance over grass. The catapult should not be so massive that it requires a truck to move it even short distances. Teams should be able to move their catapult a minimum of one mile manually. Some of the roads through campus may be closed due to the VEISHA parade or other activities, so plan accordingly!

3.2 Energy

The only allowed means of providing energy to the catapult will be that of a falling mass. No springs may be used in the construction of the launching mechanism. Tau Beta Pi would like to see creative designs resembling trebuchets rather than slingshots.
3.3 Materials

Materials that may be used are any items that may be found at a typical lumberyard or hardware store.

3.4 Remote Triggering Device & safety

Each catapult MUST be equipped with a remote triggering device and firing safety. (See Section 4.2)

3.5 Cost Constraint

The total cost for the construction of the catapult must be no greater than $200.00 (see Section 5.5).

3.6 Broken Parts

During the competition there might be times when parts will break. These parts may be replaced as long as the replacement materials were included in the initial measurement box. Tools do not have to be placed in the box. All repairs must be done within the thirty-minute time constraint.

3.7 Adjustability

Teams will be allowed to make minor modifications and adjustments to their catapults with materials that were included in the initial measurement box. An important aspect of the catapult design is its ability to be adjusted in response to variable launch factors such as wind and distance to target.

3.8 Ground Anchors

Each catapult must be fitted with four ground anchors. These should be steel stakes at least 18 in. long (make sure that you remember a means for extracting these stakes after the competition). The stakes should be placed at the corners of a rectangle no less than 4’ x 6’ with the 6’ dimension in the launch direction. The forward-most stake will serve as the datum for the catapult.

3.9 Machined Parts

Ingenuity is desirable but excessive use of custom-machined parts, e.g. low friction bearing assemblies, may be penalized. The catapult should be constructed in a typical school or home workshop. Metal parts are acceptable, but metalworking tools should be limited to hand tools. Electric drills may be used. No welding or brazing will be permitted. If there are questions regarding this, feel free to ask.
4. Safety

4.1 Supervision

Supervision is required when constructing, testing, and transporting the catapult. Tau Beta Pi will not be responsible for injuries incurred during the construction, transportation, or operation of the catapults. BE SAFE!!

4.2 Remote Triggering Device & Firing safety

Each catapult must have a remote triggering device. The catapults must be triggered from a minimum distance of ten feet to the side of the launch line. All group members must be outside this minimum distance at the time of firing, and no one should be in the firing line (in front or behind) of the catapult. This minimum distance is required to ensure that no one is hit by the moving parts of the catapult. An example of a satisfactory remote triggering device would be a rope pull ten feet long that activates a launching device.

Catapults should also include a firing safety. The catapult should be unable to fire until the safety is released. The safety may be released within the ten foot trigger limit.

4.3 Safety equipment

All group members that actively participate in the launching of the catapult will wear a hard hat and safety glasses. Tau Beta Pi will have some available on the day of the competition, but groups may also bring their own safety gear. Be sure to utilize appropriate safety gear when building and testing your designs!!

5. Report

5.1 Design Process

The report must include a documentation of the design process. This process could include brainstorming and any research that the team carried out.
5.2 Calculations

Show estimates of how far the egg will shoot with various catapult settings. Clearly show how and why the design of the catapult was selected.

5.3 Diagrams

Include labeled diagrams of catapult designs, including dimensions. These drawings may be simple and do not have to be drawn on a computer.

5.4 Adjustability

Specify how the catapult is adjustable and how adjusting it will affect predicted launch distances. Include any results from tests performed.

5.5 Prices & Resources

All materials used to create the catapult must be documented. All materials that are purchased must be recorded with the purchased price. Any donated materials, items found in students' garages, and so on must be recorded separately and given an estimated retail value, which will count toward the total cost of the project. The total cost should be no greater than $200.00!

All resources must also be documented. Any books, movies, websites, or people consulted should be referenced appropriately.

5.6 Submittal

Submit all reports by mail, postmarked before March 29, 2002, to:

Tau Beta Pi Catapult Competition
Student Services
110 Marston
Iowa State University
Ames, IA. 50011

Reports may also be submitted by e-mail to catapult@iastate.edu. Reports submitted after March 29 will be penalized (see Section 5.7).

5.7 Scoring of Report

The report will be scored out of a possible 50 points. The judges of the reports will be Tau Beta Pi members. The breakdown of scoring is as follows:
6. Check in and Inspection process

6.1 Check in

The competition will occur on April 20, 2002. All teams should plan on arriving between 9am and 12pm to check in with the Tau Beta Pi judges. If you need to arrive earlier, contact us and special arrangements will be made for dropping catapults off before 9am (see Section 8.2). Teams will be allowed to leave their catapults at the competition field during the morning, where they will be watched by Tau Beta Pi members while team participants are given time to enjoy some of the other VEISHEA highlights. Teams should be back at the competition site preparing to set up by approximately 12pm. Competition will begin at 1 pm.

6.2 Inspection Process

The reports will be mailed or e-mailed to Tau Beta Pi postmarked before April 8, 2002. Tau Beta Pi members will have had time to read the team’s report and will be looking for drastic modifications, expensive catapults, the operation of the remote triggering device, and firing safety. Teams may be asked to demonstrate that their catapult fits in the required volume (3.1).

6.3 Penalties and Bonuses

Points will be deducted from any team for the following rule violations:

- Exceeds volume constraint (3.1) -5
- Exceeds cost constraint (5.5) $0-$50, -5; $51-$100, -10; etc.
- Safety violations (4)
  - Removing protective gear -10/violation
  - Lack of remote trigger
  - Lack of ground anchors
  - etc.
- Time violation 5

Total report point value 50
Up to five bonus points may be awarded to any team that incorporates a creative theme into their catapult. These may include, but are not limited to: painting schemes, costumes, short skits or incorporating the VEISHEA theme.

7. Selection of the Winners

7.1 Winners

The winning team is the team with the most points at the end of the contest. There are a total of 100 points possible, 50 points from the report and 50 from the field competition. Winners will be announced following the completion of the last team’s launch.

In the event of a tie for first place, the teams will be placed randomly in their chosen launching areas and given four additional shots that will be scored as described in Section 2.7. After both teams have completed the four shots, the winner is the team with the highest score. If the teams are still tied, the teams will continue launching volleys of four eggs until a winner is determined.

7.2 Awards

Each team member, including one advisor, will receive a T-shirt. (Additional T-shirts may be purchased for parents, etc.) First through third place will receive prizes. The overall winning team will receive an award to display in its school’s trophy case.

8. Administrative Notes

8.1 Entry Form & Fee

To enter the contest, an entry form (included at end) and fee must be submitted. The fee will be $25.00 per team (four students and one advisor) plus $5 per member above the minimum four. This fee helps cover the cost of T-shirts, mailings, field fees, and awards. The entry form and fee should be postmarked by March 22, 2002.

Please make checks payable to: Iowa Alpha Chapter Tau Beta Pi

Mail fee and the entry form to: Tau Beta Pi Catapult Competition
Student Services
110 Marston
8.2 Contacts

Brian Crawford           Matt Determan
Project Officer         Rules Chair
bcraw4dk@iastate.edu    det@iastate.edu
(515)572-8024           (515)572-1582

Questions may also be emailed to catapult@iastate.edu.

8.3 Web Page

The following web page will be used to distribute information to all teams participating in the contest. Check it regularly for updates, rules clarifications, and responses to teams' questions. Directions to the competition site will also be posted here.

http://www.public.iastate.edu/~rmathiso/tbp/catapult.html

8.4 Weather

If the weather turns extremely nasty on the day of the competition, there is the possibility for cancellation. In the morning, check the website for information, or if necessary call Tau Beta Pi President Joe Hansen at (515) 451-3150. If the weather does force a cancellation, the competition will be rescheduled for the following Saturday, April 27, with details posted to the website.

8.5 List of Ames Hotels

**AmericInn Motel & Suites**
2507 SE 16th St.
Ames, IA. 50010
(515) 233-1005

**Comfort Inn**
1605 S. Dayton Ave.
Ames, IA. 50010
(515) 233-0689

**Hampton Inn**
1400 S. Dayton Ave.
Ames, IA. 50010
(515) 239-9999

**Heartland Inn**
I-35 & New Highway 30
Ames, IA. 50010
(515) 233-6060

**Ramada Inn**
1206 S. Duff Ave.
Ames, IA. 50010
(515) 232-3410

**Super 8 Motel**
I-35 and US 30
Ames, IA. 50010
(515) 232-6510

**University Inn**
229 S. Duff Ave.
Ames, IA 50010
Project Catapult Entry Form

This should be postmarked by March 22, 2002. The contest will be held April 20, 2002.

School: __________________________________________
Advisor: __________________________________________
E-mail: ____________________________________________

Adult Sponsor (May be same as Advisor):
Name: __________________________ Address: __________________________
Phone: __________________________ Email: ____________________________
Email: ____________________________________________
T-shirt size: _______________________________________

Relationship to Students: ____________________________

Student Team Leader:
Name: __________________________ Email: ____________________________
T-shirt size: ________________

Additional Student Team Members:

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<tr>
<th>Name</th>
<th>T-shirt size (S,M,L,XL)</th>
<th>Email (if you would like to receive updates)</th>
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Please make checks payable to: Iowa Alpha Chapter, Tau Beta Pi

Mail this form and $25 (+$5 per team member above 4) to:

  Tau Beta Pi Catapult Competition
  Student Services
  110 Marston
  Iowa State University
  Ames, IA. 50011

The entry fee of $25 includes T-shirts for 4 student team members and 1 advisor.

Please feel free to contact: Brian Crawford, bcraw4dk@iastate.edu, TBP Project Officer

More information and competition rules can be obtained at:
  http://www.public.iastate.edu/~rmathiso/tbp/catapult.html
The Tau Beta Pi Scholarship for Catapult Competition Participants

Application for Award

Tau Beta Pi is pleased to announce that it will be offering two scholarships of $500 each for those participants in the catapult competition who meet the following requirements:

• Graduating from high school this spring semester.
• Attending Iowa State University in the fall.
• Majoring in an engineering field.

The scholarship will be awarded to an applicant based on these items:

• High school transcript
• One letter of recommendation
• A 500-1500 word essay that discusses the question, “What responsibilities do you think engineers have to society, to the companies for which they work, and to themselves?”

In order to apply, send in the items listed above along with the information requested below to the following address: Tau Beta Pi, Catapult Scholarship, 110 Marston, Ames, IA, 50011. They must be postmarked by April 8th, and can be sent in along with the catapult team report, which is due by that date as well. More than one applicant from each team can apply for the scholarship.

1. Name:

2. E-mail address:

3. Address:

4. Phone number:

5. High School:

6. Catapult Advisor:

7. Cumulative GPA:

8. Activities:

Recipients of the scholarship will be announced on April 20th.
If there are any questions, please contact Brian Crawford, Project Chair, at 515-572-8024 or catapult@iastate.edu.
Tau Beta Pi

VEISHEA Catapult Competition
Official score sheet

Team Name: ____________________  Advisor: ____________________

Technical Paper:
Design Process /10
Calculations /10
Safety Implementation /5
Diagrams /5
Price List /5
Description of Adjustability /5
Professionalism of Report /5
Report Received on Time /5

Paper Subtotal /50

Field Competition:
Distance Selected: ___

Field Competition Subtotal /50

Scoring Matrix

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<thead>
<tr>
<th></th>
<th>60'</th>
<th>80'</th>
<th>100'</th>
<th>120'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bull's eye</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Strikes platform outside the bulls eye</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Miss</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Penalties/Bonus

Judges comments:

Judges Names:

Grand Total: ___ /100
General Schedule

9:00am – Begin receiving catapults
12:00pm – Registration
1:00pm – Competition begins
3:30pm – Judges meeting
4:00pm – Awards
5:30pm – clean up...

Order of Competition

1:00pm – Urbandale
1:30pm – Washington
2:00pm – Keokuk
2:30pm – Hubbard-Radcliffe
3:00pm – Bettendorf