

Team 3 Cosmic Quest Engineering Notebook

Mechatronics Engineering 2023-2024 <Team Spoons>

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<Add a Picture or Meme that represents you>



Instructions:

For each day that you enter data into your Engineering Notebook, Copy this template text and table for each project entry. The difference between a Physical Engineering Notebook and this Notebook will be that your most current entry (i.e. Your newest entry) will be at the "top" like a blog... Check [here for a Rubric](#)

Sometimes you will see a comment from your teacher. Please read, and if it's a question, answer it.

Comment or Question from Mr. Burnham:

<copy text between these lines>

<Date> <Title - Daily/Weekly "Blog" Project Title - compelling, descriptive title>

Write a short paragraph of today's Project Goals...25 words

Planned Task List:

- List each
- Task you are trying
- To accomplish today

Useful Reference Links:

- List any links related to today's work
-

Today's Class Notes: <enter class lecture notes here>

What Did We Working On Today (Labs, Robot Club, Other Projects):

Describe the steps/challenges you are working on. Make sure you describe how you set up the experiment, how you executed it, and all the materials you needed to do it. Spend time writing your "reflections". Sometimes more important than the actual results, are your thoughts on "why" and "how". Here is where you accurately describe both the success and failures.

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Include pictures, Code or links to Code, and links to reference material.

What Will I Work On Next Time?

- (fill this out at the end of class/open lab activity time)
- List your next 2-5 steps or activities.
- This is key!!!
- You need to be thinking about this project as a whole, and break it down into
- small tasks you can complete in 30-60 min

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What Will I Work On Next Time?

- Modify our launcher to arc the tennis ball higher

<04/23/24> <Finishing our project>

We will finish up our project today.

What Did We Working On Today (Labs, Robot Club, Other Projects):

We tested it and decided to zip tie our throwing arm onto the base of the frame. This stabilized our arm and acted as a hinge. After testing again, the tennis ball (with no modifications) was able to land on the platform with the pillows. However, it did not have a high enough arc to land onto the platforms with the lava rocks.

What Will I Work On Next Time?

- Continue improving and adjusting the design



<04/22/24> <Continue Construction>

Today we will continue working and building our project.

What Did We Working On Today (Labs, Robot Club, Other Projects):

We decided to use the bike tube for our tension system. We put it over the two planks on the side and gave it a continuous twist. We also added a cup to hold our tennis ball and attached it to the swinging plank.

What Will I Work On Next Time?

- Test it out
 - Adjust accordingly



<04/12/24> <Building project>

Write a short paragraph of today's Project Goals...25 words

What Did We Working On Today (Labs, Robot Club, Other Projects):

- Built our base
 - Drilled holes and put screws in
 - Two on each side
- Cut wood for poles
- Got new wood for the top part

What Will I Work On Next Time?

- Put the rest together



<4/11/24> <Design Specifications>

Lay out the requirements and constraints of our design

Materials: Scaled down by 0.416666667

- 2 pieces 15 inches long (sides) (og: 36 in)
- 1 piece 12.5 inches long (Swing arm) (og: 30 in)
- 4 pieces 6.25 inches long (Cross pieces) (og: 15 in)
- 1 piece 7.5 inches long (Swing arm stop bar) (og: 18 in)

Other Wood:

- 1 square piece of plywood anywhere from 1/4 inch thick to 1/2 inch thick. It is 15 inches by 18 1/2 inches in size and cut it diagonally so it makes two triangles as shown in the picture above.
- 1 broom stick cut into two pieces approximately 15 inches long each (These are the handles for twisting the rope)

Useful Reference Links:

- [How to make the Wyvern Catapult](#)
-

What Will I Work On Next Time?

- Building our design



<4/9/24> <New Design>

Figure out an easier design that will be consistent and accurate

Planned Task List:

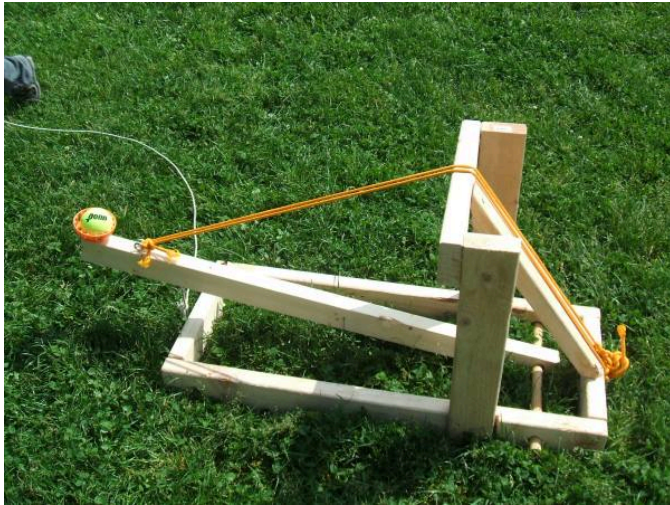
- Brainstorm
- Design and Create

Useful Reference Links:

- [How to make the Wyvern Catapult](#)
-

What Did We Working On Today (Labs, Robot Club, Other Projects):

- Decided to go with a different launching mechanism
- Catapult
 - Wood
 - Cord
 - Latch as trigger



What Will I Work On Next Time?

- Cut wood
- Find latch mechanism

<3/8/24> <Tennis Ball Payload>

Figure out what the payload will have

Planned Task List:

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Useful Reference Links:

- https://www.thetech.org/media/fczipobar/ttc24_rules-final.pdf
- <https://www.thetech.org/media/tbxbndpb/ttc-cosmic-web-set-11323-al.pdf>
-

What Did We Working On Today (Labs, Robot Club, Other Projects):

Payload:

- Add weights?
- Wrap socks around
- Box Cube

We will weld a u-structure at the front of the tube so that the trampoline springs will be able to lock onto something.

What Will I Work On Next Time?

- Cut pipe and wood
- Finalize drawing



<3/6/24> <Tennis Ball Launcher Design>

Start to finalize

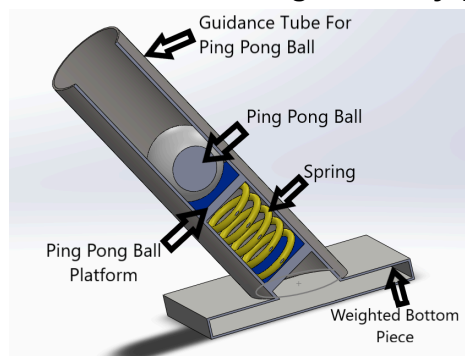
Planned Task List:

- Brainstorm launcher ideas

Useful Reference Links:

- [Group 7 Projectile Launcher - Part 1](#)
- [Group 7 Projectile Launcher - Part 2](#)

What Did We Working On Today (Labs, Robot Club, Other Projects):



[projectile motion.wmv](#)

Materials:

- Wood block
- Spring(s)
- A tennis-wide PVC pipe
- Metal Brackets
- Screws

The idea is to propel the tennis ball via a spring loaded tube that is fastened to a wood base. The spring would have a handle jutting out the outside of the tube and be pulled back to a desired position. We would mark down increments on the wood base for each of the target platforms.



A different idea would be to have the tennis ball start at the end of the tube and pull it back with handles. The tennis ball would be launched with trampoline strings attached to poles in front of the tube, pulling the tennis ball forward instead of pushing. The materials and design would stay the same with the springs located on the outside instead.

What Will I Work On Next Time?

- Finalize Ideas
- Construct the launcher

<3/1/24> <Brainstorm>

Brainstorm ideas of the launching mechanism and the tennis casing

Planned Task List:

- Brainstorm Ideas
-

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- <https://www.thetech.org/media/tbxbndpb/ttc-cosmic-web-set-11323-al.pdf>
-  Group 7 Projectile Launcher - Part 1
-  Group 7 Projectile Launcher - Part 2
-  ping pong ball launcher Cara
-  Tennis Ball Launcher

What Did We Working On Today (Labs, Robot Club, Other Projects):

We decided on using a spring tube launcher to launch the tennis ball

- The tennis ball will be wrapped with a fabric material with weights
- Increments will be marked on the tube for the strength needed
- The base will be made of wood and clamped down onto the platform
- A string will be used to release the mechanism

What Will I Work On Next Time?

- Choose a design/idea
- Research

<copy text between these lines>



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