

Team 218
(Eclipse Envoys)
Cosmic Quest
Engineering Notebook
Mechatronics Engineering 2023-2024

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Air pressure in the motor.

Rocket engine inside the projectile

If there is little to no air pressure, then a simple throwing mechanism would work.

Using water could work, as it could solidify into ice and create air pressure to throw the projectile

Wheel motors that will throw the projectile into the platform.

Crossbow mechanism that will throw the box onto the platforms and stick on there.

Slingshot mechanism that will throw the tennis ball into the platforms and stick on it .



<2/9/24> Idea Chosen

Our idea is to make a crossbow

Planned Task List:

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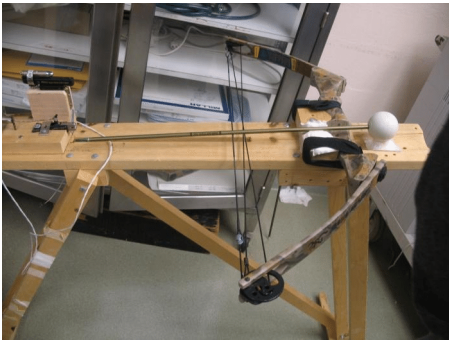
Useful Reference Links:

- List any links related to today's work
- https://www.thetech.org/media/fczpobar/ttc24_rules-final.pdf
- [Bungee Bazooka : 17 Steps \(with Pictures\) - Instructables](#)

Today's Class Notes:?

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

We decided to choose a Crossbow to launch our tennis ball, it will be powered by trampoline springs and will have a hook. Main material will be wood, but clamps and hooks will be metal. The main course the ball will be going through is a part tube and open air segment.



What Will We Work On Next Time?

- Finding the equipment
- Deciding what modifications the tennis ball will receive
- Building it step by step and documenting it in our Engineering notebook

<3/1/24> Designing the rough draft

Our idea is to make a crossbow

Planned Task List:

- We would need a strong string, wood, screws and nails to keep it together

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- https://www.thetech.org/media/fczipobar/ttc24_rules-final.pdf
- [Bungee Bazooka : 17 Steps \(with Pictures \) - Instructables](#)
- TinkerCad Design:
<https://www.tinkercad.com/things/aIEZswZSbKJ-bodacious-stantia-habbi/edit?sharecode=ejt2tcxmZErFbCfA-YhmeztodUm4ltjDEOHYbEI3ju4>

Today's Class Notes:?



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

What Will I Work On Next Time?

3/8/2024 Making the Crossbow

We used one relatively medium size wood and a red small wood piece and screwed in the pieces together using a drill. How did we do it? First we found the right sizes of wood which took longer than expected 1 red smaller piece and 1 medium size wood piece then we got 2 screws



3/15/2024 NEW Bike Wheel Tire

The Bike Wheel Tire first got cut to a small enough piece for us to fit into the crossbow. Then we measured the crossbow distance and made sure we had an accurate distance for us to cut and be sure we didn't waste any Bike Wheel Tire and be as efficient as possible.



3/22/2024 Reflecting/Improving

The Bike wheel Tire will be used to pull the ball and launch the ball through the crossbow using four zip ties, two on each side to hold the Bike Wheel and keep it controlled and steady. We also came up with the idea of tapping the ball fully up with a zip tie that's acting as a hook for our future launching mechanism. Adding extra weight could be a good thing for us as it would allow the ball to stay on the target, as we hit it and would make it less likely to bounce off the target.



4/5/2024 Adding Support For the Bike Wheel Tire

For the support of the Bike Wheel Tire we used zip ties using four zip ties, two on each side to hold the Bike Wheel and keep it controlled and steady. We also added on to the Bike Wheel Tire and cut a hole in the very end where the ball would launch from. This image was just visual of our imagination.





4/12/2024 Two New Wood Pieces!

Today we added two new pieces, The first reason was for stability and the second obvious reason is to have the ability to launch higher since our targets are at higher ground so we needed to add two pieces one of

each to hold the red top piece from two sides. We then drilled the red piece into the two pieces and with that we have a good base



4/16/2024 Big Problem

Today we were testing out our crossbow we made a lot of progress so some of us wanted to do a test run but it backfired and resulted in a the zip tie in the ball to be removed from the tape and our new bases falling off from the screws we did it was a mess and a step back from our progress but we finished the day strong by getting the zip tie back on with new tape and screwing in the new pieces we added.



4/17/2024 NEW BASE

Today we realized that our base wasn't as sturdy as we had thought and need something in the bottom to be connected to the two wood pieces holding up the crossbow and we also didn't account for the requirement of the clamp with that in mind we added a skinny wooden plank to stabilize our base and to screw the two wood piece into it. This also strangely enough fits the requirement for the clamp.



4/18/2024 Adding the Trigger

For the trigger we cut the end part of the crossbow and created space for the trigger to launch the balls.



The trigger is a laser cut release mechanism. How it works is we pull back the ball using the zip tie and hold it into the release mechanism and with that it fires and hopefully hits the targets.

