January 2022

The Mech Tech Dragons Digest

Team 422's Newsletter from Maggie L. Walker Governor's School

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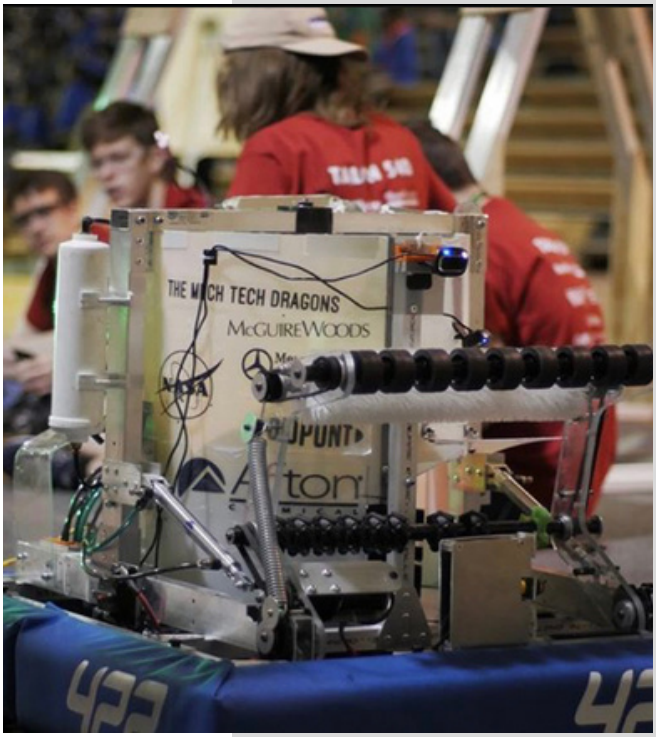
ABOUT TEAM 422

Located in Richmond, Virginia, we are FIRST Robotics Competition Team 422: The Mech Tech Dragons from Maggie L. Walker Governor's School. Since our founding in 1999, we have served as a major Science, Technology, Engineering, and Mathematics (STEM) outlet in our high school and local community, where students on and off the team can explore meaningful opportunities in STEM. Beyond working to build a competitive robot and participating in competitions, the Mech Tech Dragons seek out ways to Advance, Advise, and Advocate for STEM education in our local community through hosting events, demonstrating our robot, volunteering, and mentoring other teams.



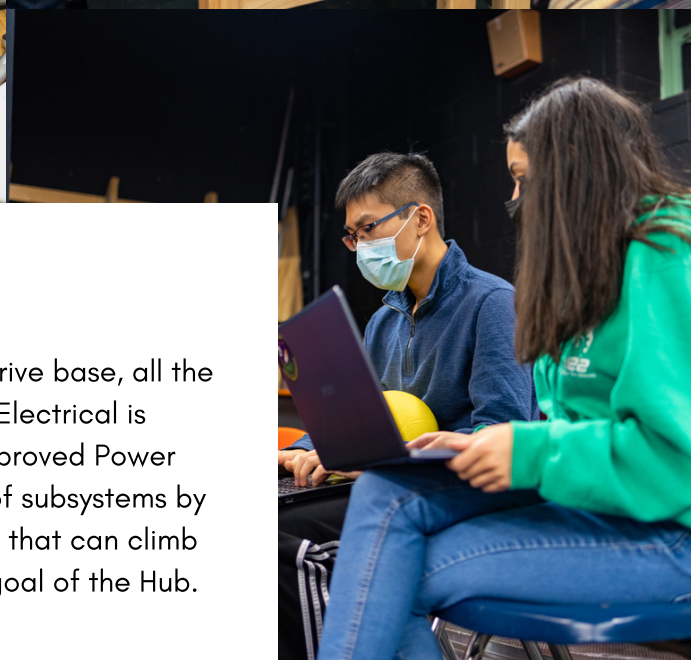
TEAM 422 GETS TO WORK AT KICKOFF

On Saturday, January 8, Team 422 gathered for the kickoff of the 2022 season. After much anticipation and speculation, this year's game, Rapid React, was revealed. No, it is not a water game—Rapid React features the Hub, a central tower where robots score "cargo," and the Hangar, a structure with four lateral bars for robots to climb during the endgame. While Rapid React's focus on shooting and climbing is familiar, its new rules and elements keep it exciting as ever.

Before watching the kickoff stream, the team worked on bonding and communication through applied improv with James Wasilewski, the Senior Director of University Development at VCU. After the game reveal, members unlocked the 136-page manual and began strategizing. In rotations led by alumni, members began to flesh our their ideas—thinking about everything from field dimensions to scoring.

Get a tour of the RAPID REACT field
Check out this season's game manual

"Everyone's been working really hard to push our limits as a team. I'm so proud of our progress so far and am excited to get back to competing!" -*Quinn Kast, CEO*



GETTING TO WORK

Build is working on prototyping intakes and starting the new drive base, all the while implementing a new shift system for COVID mitigation. Electrical is getting started with new components including a new and improved Power Distribution Hub, and Programming plans to finish the basics of subsystems by the end of the weekend. The team is aiming to create a robot that can climb on the high bar in the Hangar and shoot reliably for the high goal of the Hub.

IN THE COMMUNITY

The Outreach team is hard at work on new projects for 2022. We are continuing to promote FIRST Lego League by collaborating with VA-DC FLL and our Bellevue team, planning a lineup of community demos and workshops, preparing for awards, and more.

INAUGURAL PARADE

On Saturday, Team 422 represented the Richmond STEM community at the Governor's Inaugural Parade. We marched along with CodeVA, FRC 1086: Blue Cheese, the Bellevue Elementary STEM Center, the Martin Luther King Jr. S.T.E.M. academy and the A.T.O.M. Academy at Martin Luther King Jr. Middle School to advocate for attention and funding for STEM education in the commonwealth.

ASCV DEMO

This past weekend, we led a STEM workshop with elementary school students from the Autism Society of Central Virginia. We taught them about the science behind buoyancy in an activity where they built boats from recycled materials. The kids used their creativity to create their boats with limited materials—and had a lot of fun along the way!

FIRST LEGO LEAGUE

2021 RECAP

Throughout our offseason, we have worked hard to support FIRST Lego League (FLL) in Virginia, with the goal of reducing barriers to entry for the program. Last year, we built portable game tables and offered them to teams for free. We held an FLL Experts Panel with two aeronautical engineers who gave teams inspiration for and feedback on their Innovation Projects. We hosted our annual FLL Tournament (the largest and longest-lasting in Central Virginia!) with teams from the region. It was awesome to welcome teams back to an in-person tournament and give them the opportunity to have fun and share their work. With FLL Fun Rooms, a live talkshow, and an outstanding team of volunteers, the event was a smashing success and the subject of much praise by coaches and students alike!

We are thrilled with our work, but are not finished yet. Many teams did not get the opportunity to participate in FLL last year due to COVID and the early season. Thus, we are working with leadership at VA-DC FLL to coordinate an Offseason Tournament in March.

BELLEVUE

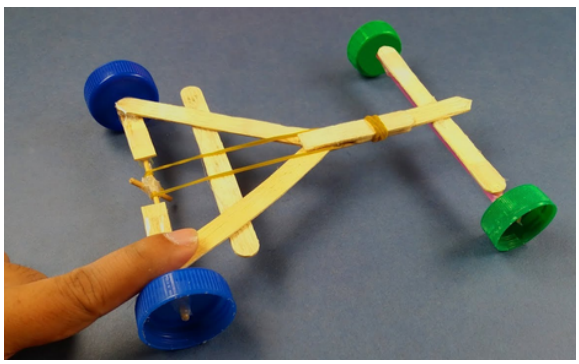
Twice a week, our team members mentor the "Junior Dragons" FLL team at Bellevue Elementary! These biweekly events are an important way we spread STEM throughout our community, exposing children to programming, robot-building, and FIRST robotics. We organize activities and let every kid get hands-on with their self-built LEGO robots. From robotic arms to racing frogs, our Bellevue team has learned about STEM while having fun.

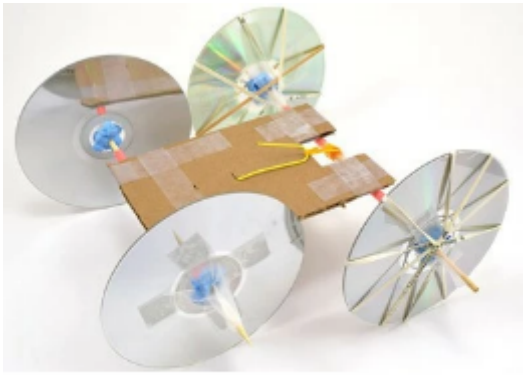
A RUBBER BAND CAR

FEEL THE SPEED FROM THE COMFORT OF YOUR OWN HOME!

Need something to do to fill the endless void of time? Try making a rubber band car and learn some STEM concepts while you're at it!

Start by cutting some cardboard, about the length of the straw, tape it to two sides of the cardboard. Then, cut a one inch square out of one of the sides with the straws. Use a wooden skewer and put it through the straws, and to add the wheels, take sponge and stick it into the middle of the CD, and attach this to the skewers. Tape should be used for stability. Alternatively, you can find other wheels like bottle caps and hot glue them to the skewers.



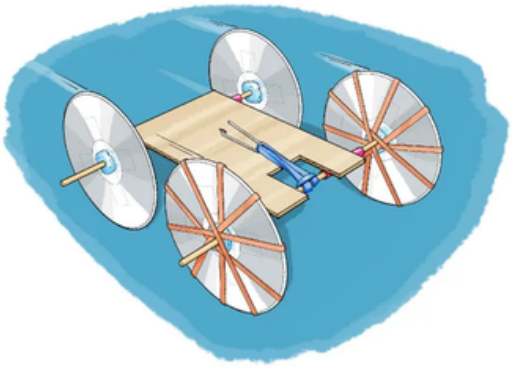


Build a Rubber Band-Powered Car | STEM Activity

Build a rubber band-powered car in this fun STEM

Take a rubber band and loop it through itself around the exposed skewer, where you cut out the one inch square, attach it to the skewer using hot glue. In the middle of the cardboard, cut a hole and hook a paperclip through, and hook the other end of the rubber band on there. Now it's time to wind up the car, simply do this by turning the axel with the rubber band attached.

Have fun learning about the mechanics of potential energy and kinetic energy with this project! You can also try making your design more aerodynamic for more speed.



THANK YOU TO OUR AMAZING SPONSORS!

Thank you so much for being a sponsor of our team! By supporting the Mech Tech Dragons, you are investing in the future of the over 90 aspiring STEM and business professionals on the team, and helping us further our mission of making STEM accessible to youth across Richmond. Thank you again for making this program possible.