

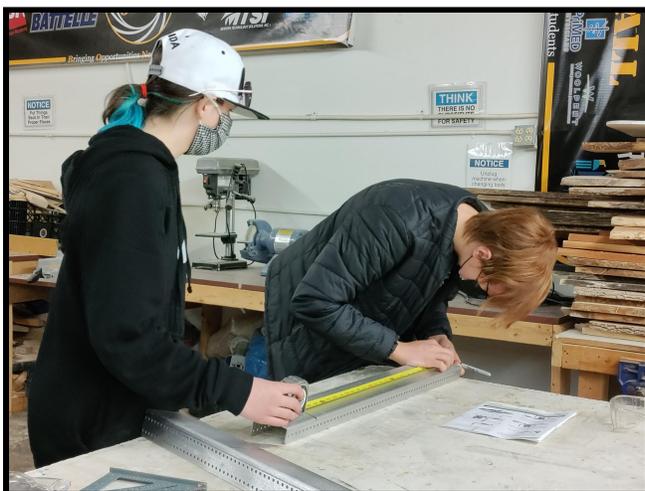


BONDS 581F

Welcome to our fifth weekly BONDS Status Report of the 2022 season, where we summarize what our team has achieved in each week of our build season! In this entry, you'll see what BONDS Robotics accomplished in the fifth week of the build season for the 2022 FRC competition, Rapid React!

Climbing Mechanism

Monday, February 7th, was an important day for the climbing mechanism team! After having a successful trial last week testing the strength of the climber, we took the robot upstairs to test how it would hold up on our recreation of the rungs in the hangar area, constructed by our mentors. As we watched our climber's arm shorten and lift the full weight of the robot off of the ground, we quickly discovered two things. First, we saw that the robot was tilting more to one side since it wasn't properly secured to the base of the climber. Second, the prototype hook we used to latch onto the rungs didn't appear strong enough to hold the weight of the robot for long. With both of these things in mind, we decided the best way to improve our climber mechanism is to stabilize the bottom of our climber, to connect our second motor to the robot, and to install a bearing so the piece of rope moving inside the mechanism doesn't wear out by rubbing against the aluminum the climber is made out of. As for our hook, we will take into account its movement on the bar as the climber's arm shortens when we design our final hook.



On Wednesday, February 9th, we disassembled the climber to remove some elements of it that were broken and machined metal replacements for the broken pieces. We also worked on measuring and cutting the final metal pieces for the climber.

On Thursday, February 10th, we finished measuring and cutting all of the metal tubing for the climber mechanism, as well as the

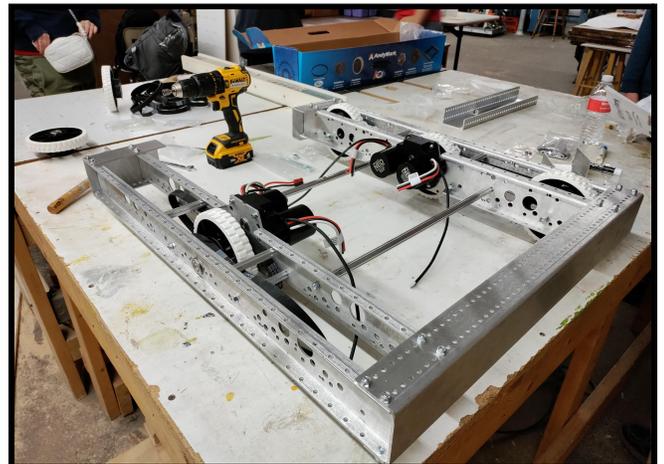
superstructure. The way we define the two is that our climber mechanism is the telescoping arm that extends and shortens, while the superstructure is what connects the entire climber mechanism to our ball manipulator and attaches it securely to our robot.

Scoring Mechanism

On Monday, the scoring mechanism team created a list of supplies we'll need to begin making our final ball manipulator. We then scanned the shop to see if we had some of the materials, such as lexan, bearings, and chains, already. Luckily, we were able to find most of what we needed to make our ball manipulator! On Wednesday, we made some minor adjustments to the Computer Aided Design (CAD) of our ball manipulator's side panel. Thankfully, the CAD of our ball manipulator is very close to being complete!

Drive Train

On Thursday, our team continued putting together our robot chassis, connecting the motors to the metal frame and installing wheels onto the chassis. This part of the robot is essential for us to perfect, as it's the platform that we use to place all of our electrical components, our climbing mechanism, and our scoring mechanism on. The materials and instructions to make the chassis came in a kit we got at the beginning of our season, so it was easy for many students to join in and help with manufacturing this key element of our robot.

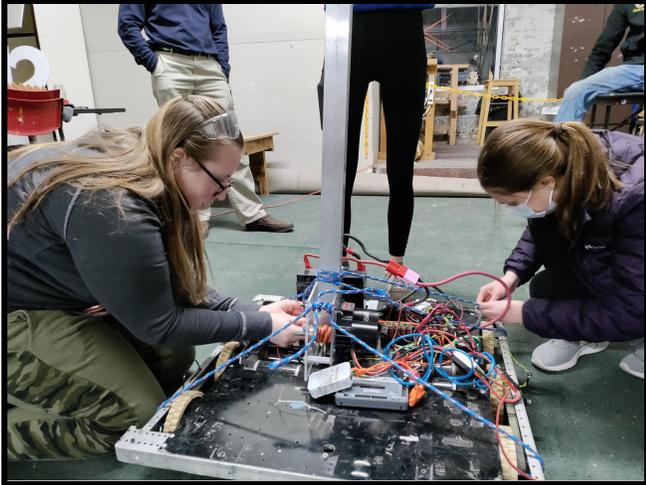


Troubleshooting X-Carve

A big part of how we learn about different equipment in the shop is by working on how to troubleshoot it if it breaks. We did exactly this during Wednesday and Thursday's practices by trying to remove a broken bit inside of our X-Carve. This is why our mentors' support is so valuable, as whenever our students encounter a problem with one of our equipment, we can always rely on their knowledge and experience to help us solve our problem!

We are now almost halfway through the build season! From being able to test our robot for the first time on the rungs, to having more opportunities to use equipment in our shop to manufacture our robot pieces, we're excited of all the progress we have been able to make so far. One thing we've taken seriously since our Critical Design Review

(CDR) is communication within the team. After every meeting, each of our students report what they were able to achieve that day. Documenting our progress every meeting is hugely beneficial for keeping us on track, and is also helpful for when the editor of our newsletter (a.k.a myself) needs to write status reports! We also regularly share updates on CAD files of our robot and any changes made to them, as well as coordinate if and when we need to have an extra practice on the weekend. Overall, communication is what has helped us stay motivated and on target during this build season!



We want to give a big thank you to all of our sponsors this year! None of this would be possible without you, as your support allows us to continue learning STEM values and to Bring Opportunities Near Dayton Students.



To see more of our progress throughout the season, please follow us on Instagram, Twitter, YouTube, and our official website! Stay tuned!



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