



BONDS 581F

Welcome to our third 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 third week of the build season for the 2022 FRC competition, Rapid React!

Climbing Mechanism and Scoring Mechanism

Both the climbing and scoring mechanism teams were busy this week adding details to the CADs of our prototypes and constructing our physical prototypes to test with. The climbing mechanism created a metal version of the telescope mechanism that we'll use to pull ourselves up onto the rungs. Meanwhile, the scoring mechanism team continued adding to the elevated platform we had started building in the previous week. We added a wooden backboard for the back, then attached pieces of wood for us to place our axles through.



CDR Review

On Saturday, January 29th, our team held our Critical Design Review in our upstairs shop. During the review, we updated our panel of engineers on the progress we have made since the Preliminary Design Review and shared what our goals for the build team, electrical team, and programming team would be like for the rest of the season. After our presentation, we had a great discussion with the engineers, who shared with us their observations of weak points in our scoring and climbing mechanisms and provided tips as to how we could overcome these obstacles. For example, to improve the grip of our climbing mechanism's hooks, we could consider adding rubber adhesive to the inside of the hook that grips against the





bar to increase friction and prevent our robot from falling off. Another example is that, for our scoring mechanism, we could improve how we shoot cargo balls by having a series of wheels spinning in the opposite direction of our motors that intake the ball.

We also received critiques on the clarity of our presentation. One of our key takeaways was that details are essential to conveying our points more effectively, whether it be including math alongside our mechanism designs or utilizing different screenshots that show various angles of our CAD designs. For next year's CDR, we'll be sure to provide specifics that will help our presentation be more concise.

After the initial presentation and a lunch break, we all sat down and worked with the engineers to address any remaining concerns they had with our team's robot and season schedule. Once we finished the CDR, our team immediately grouped up and devised a plan to have a separate meeting online

that evening to discuss what we had learned. After such a comprehensive review, we were eager to get back to work!

In the evening, our team had a more in-depth discussion online about what we had learned earlier in the day. We made a list of all the critiques we had received during the CDR and combined them into one spreadsheet. Now, these critiques are our tasks for the rest of the season. This spreadsheet not only includes what we need done to have a fully working scoring and climbing mechanism, but also includes what tasks are required for our programming team, electrical team, and drive train. After listing all of our tasks, we split up into separate groups for our climber and our ball manipulator and each made plans for what we wanted to start working on next Monday. We still have manufacturing of the drivetrain we need to complete on top of perfecting our robot CAD and creating prototypes for us to test with and manufacture, so it's important that we utilize the time we have to the fullest!

Going forward, BONDS will work on prototypes and CAD in tandem to avoid spending too much time on building without proper measurements and to maximize on

our meeting times. Second, with the aid of our new list of tasks for the build season, our team will know what requirements we need to fulfill in order to have a robust and efficient robot. Third, we will communicate via social media more frequently, which will help us stay connected outside of our meeting hours. With so many students involved in several areas of our team this year, it's important that we stay on track!

Error on Last Week's Newsletter

In reference to last week's newsletter, the newsletter editor (a.k.a myself) mistakenly said we were learning Statistics in one of our meetings instead of Statics. I apologize for this error!

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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