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Orange Crush to compete at Minnesota Regional

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While most students enjoyed their spring break, Delano's robotics club, Orange Crush, was hard at work this past week, repairing and making improvements to their robot ahead of this week's Minnesota 10,000 Lakes Regional competition.

What is a robotics competition

To an outsider, the First Robotics Competition (FRC) rules and regulations may seem confusing at first. Still, each season starts with a video reveal of the competition challenge, the game that will be played for the duration of the season across FRC.

After the game reveal, teams have six weeks to build a robot before the competition season begins. The competition season runs for seven weeks. However, each club is limited to two regional competitions per season, meaning each club only has two opportunities to reach the FRC World



PHOTO BY BEN ERNHART

Jaxon Duberstein, Michael Simons, and Cameron Knoph display the climber arms that were being repaired ahead of the Minnesota 10,000 Lakes Regional.

Championship.

Two teams from the alliance that won a regional competition advance

to the FRC World Championship in Houston, the captains of that winning alliance and the team they picked first

at the regional competition. Teams compete in several qualifying matches at each regional competition that ranks the participating teams. The top-ranked teams then get to select two other teams in a serpentine-style draft for the playoff matches. Additionally, teams can also qualify for the World Championship if they win the Engineering Inspiration or Chairman's Award.

"It's crazy when you think about it," said Sue Duberstein, one of Orange Crush's coaches. "Since the first Saturday in January, we've been here four days a week, working like crazy, and it's all for these two regionals."

This year's game

This year's game, Rapid React, entails two alliances of three teams each. The game's primary objective is to score points by shooting cargo balls, large tennis balls, into either a four foot high goal worth one point or

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an eight foot goal worth two points. Teams can also score additional points in the end game if their robot can climb to different rungs in their respective hangar, essentially a set of four monkey bars at staggered heights that increase with each rung.

Each match lasts two minutes and 30 seconds. However, in the first 15 seconds of the match the robots are autonomous, meaning they are pre-programmed and cannot be operated by their drivers. During those first 15 seconds, teams are limited to just one pre-loaded cargo ball.

"Most teams just try to drive off the line because that'll get you some points," explained Jaxon Duberstein, Orange Crush's driver, and build lead. "The good teams can go pick up a ball, shoot two balls, go pick up two more balls and then shoot both of those all preprogrammed."

Iowa competition

After finishing 22nd in the qualifying matches at the Iowa Regional at the end of March, Orange Crush was selected by another alliance to compete in the quarterfinals. Unfortunately, the club did not advance to the semifinals, but they'll have another opportunity this week to punch their ticket to FRC World Championship when the club travels to the University of Minnesota for the Minnesota 10,000 lakes Regional.

COVID-19 year

This season, Orange Crush returned to competition after a year off. In 2021, the FRC limited in-person events due to COVID-19. The pandemic, combined with many new members to the team, prompted the club to take a break from competition and focus on the future to help some of the younger members get caught up to speed.

In reference to the year of preparation, Cameron Knoph, a freshman on this year's team, said, "We were able to gain some experience in the problem-solving part of it, and us-

ing the different tools."

Additionally, Grace Reither, another freshman on this year's team, said, "We split up into two separate teams, and then we built our own robots. That kind of got us a feel for building a robot because in 2020, we kind of helped, but there were a bunch of seniors on the team, so we kind of were just learning as much as we could. Then last year, we actually got to build a robot."

An extra year of preparation also allowed the team's programmers to gain proficiency with new programming languages. In 2020, the last time Orange crush competed, the club used Labview for their robot. Unhappy with the program, freshman programmers Russell Hynes and Justin Noor lead the change from Labview to C++ before eventually moving to Java this season.

"Between 2020 and 2021, we switched. We were programming the 2020 robot, the competition robot for that year, and it helped us learn a lot about how to program the robot in a text-based language," said Hynes.

Hynes continued, "With the C++ experience, we pretty much had the 2020 robot all figured out, but then this year we switched to Java, mainly because most programmer jobs require you to have some Java experience."

So we've been learning Java, and from C++ to Java, it's been a pretty easy transition because C++ is a lot harder than Java, and a lot of the stuff you learn in C++ is in Java just with a different name."

This season

Even with the extra year of preparation, Orange Crush has still faced its fair share of adversity this season. "It got kind of stressful," said Michael Simons, a freshman technician on the team, in reference to the club's first competition.

Two weeks before the Iowa Regional, the club redesigned their climber system for their robot, only to find out that the system didn't comply with FRC rules two days before they loaded up the trailer for

the competition. "So that was Monday night before the competition," said Jaxon Duberstein. "We worked on fixing it a little bit that night, Tuesday night we did a little bit more, Wednesday we packed up the trailer and drove down, and Thursday we put the climber back on during practice matches."

Duberstein admitted that their climber had some additional problems that Thursday and Friday of competition, but their impromptu repairs paid off in a big way during Friday's last four matches. The club's robot was able to climb to the top rung of their hangar, which was only achieved by a fourth of the team at the regional competition.

Additionally, when we met with the club, they were repairing one of the arms of their climber that ripped off during their final quarterfinals match at the Iowa Regional. "In a last-ditch effort to climb a little higher, I grabbed on with just one arm, and it ripped off because it tried to support the entire 100-pound robot," Jaxon Duberstein said.

Creating interest

Coach Duberstein also expressed her hopes of creating more interest in the program,

highlighting numerous opportunities to gain real-world experience. Here's what Duberstein had to say:

"One of the biggest things that I'd like to get out there is how this isn't just about the robot. It's about starting these younger teams and getting STEM into the community, and holding camps, workshops, and programs about engineering. We also need students who want nothing to do with the robot. We need someone who does social media for us, someone who does videos for us, and someone who wants to run a business. We have at least a \$25,000 budget every year that needs to be raised completely by us. There's so much to do that has nothing to do with the robot, and that's where we're in trouble because the parents have to do so much of that, and the students should be doing that to gain that experience."

As previously mentioned above, Orange Crush will be competing this week at the Minnesota 10,000 Lakes Regional. That event runs from Aug. 6 through Aug. 9. Those interested in joining the club can find more information on the club's website at www.orange-crush3026.com