FRC 3100

LIGHTNING TURTLES

Off-Season Newsletter #4
December 2nd, 2019

CHALLENGING OURSELVES TO ACHIEVE!

TEAM BUILDING

We've had a large focus on improving our skills as a team and effectively working with each other as we begin to wrap up our pre-season. We've learned a lot so far and recognize that there is still much more to learn in the future!

INSIDE:

TEAM CALENDAR

12/1 - 12/15

12/3 - 12/4 - 12/5
TEAM MEETINGS
Full Team Meetings
Final Build
3:20p - 6p

12/10
TEAM MEETING
Full Team Meeting
Driver Practice
3:20p - 6p

12/12
TEAM MEETING
Full Team Meeting
Turtle Trials Practice Competition
3:20p - 6p

12/13
TTCS Qualifications
Turtle Trials Qual. Competition
3:20p - 8p

12/14
TTCS Playoffs
Turtle Trials Competition
8a - 2p

FRIENDLY COMPETITION

Recent and Upcoming Competitions

RAZORBACK LEGACY

It's been 11 months since the 2019 season started and our robot - Razorback - made it through 8 competitions and 7 public demonstrations. It now moves to our robot hall of fame. We're ready for 2020!

MMR OFF-SEASON COMPETITION

Minne-Mini Regional (MMR) was our last off-season competition ~ held at Prior Lake High School. More than 30 teams participated and FRC 2169 KingTec were great hosts! This was our best off-season competition yet; we placed well and many new bot drivers were trained.

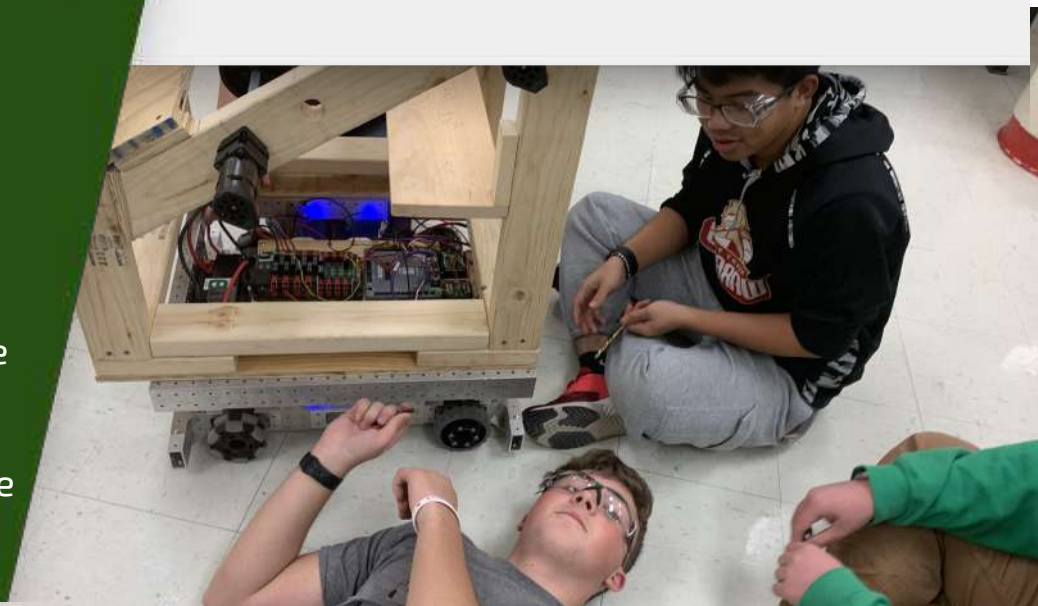
TTCS COMPETITION

Pre-season Grand Finale

As we draw closer to our off-season training competition finale, sub-teams are getting ready to test student-built mechanisms on Fri/Sat Dec 13&14 in our TTCS (internal competition) event.
With 4 teams competing, alliances of 2 teams will work together to reach an exact score by manipulating balls into towers and hoppers. As with all FRC game competitions, they are designed to promote Coopertition within alliances

WHAT IS TTCS?

TTCS stands for "Turtle Trials Competition Series" - a training program developed by our mentors and student leads. For more information about this, check our social media, website, YouTube channel, or in previous newsletter releases.



LEARNING & LEADING

Fine-Tuning Our Skills and Practicing for Positive Outcomes

SKILLS BUILDING

Our fall focus has been on improving team skills. We've learned about risk analysis, problem-solving and critical thinking leading to better individual and team decision-making. Great college prep!

GRIP WORKSHOP WITH 2177

Thanks to FRC 2177 ~ The Robbettes ~ for hosting a training event for female members of the FIRST Community! We learned many valuable skills in programming & electrical that we will to pass on to the rest of our members during our preseason training!

TRIAL AND ERROR

Many groups are in the middle of testing their mechanisms built for our TTCS off-season competition With several tests completed, many groups are feeling confident about their designs that they've been working on since mid-Sept.

RISK ANALYSIS

As a full team, we participated in a risk-analysis exercise. This taught us about go/no go decision-making and how to prioritize ~ critical skills to engineering and robot design. Using these techniques, we improved the mechanisms on our preseason projects, creating a more effective and efficient workflow and hopefully improved work ethic within our team. We plan to apply this type of risk analysis during the build season and are confident it will be useful for quick decisions.

TEAM BONK

Preseason Training Group #1

FINAL DESIGN

Our group has moved away from the “claw/hand” design, and is going to use a box to hold Accelerators (Orange Kickballs) and the Components (Wiffle Balls). A piston with a plate attached to the main arm will shoot the different game pieces into the different scoring zones. The arm will be on the base shown and will be able to be adjusted midgame and between games.

DESIGN ITERATIONS

Currently, our mechanism is being fabricated in the woodshop and is near completion. Our team needs to complete fabricating parts for the arm and attach the piston to the arm.

MEMBER SPOTLIGHT

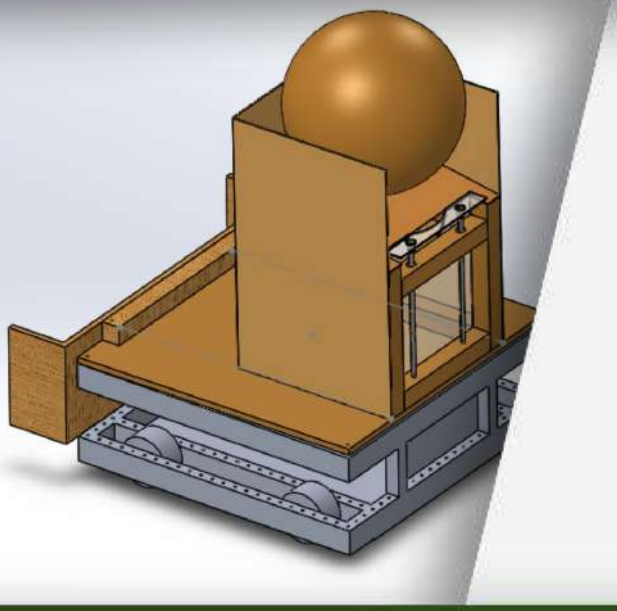
Josiah De Leon is joining the Build Division for his second year as a team veteran. Josiah joined the team last year to gain engineering knowledge and skills, as well as make friends who share his passion for Robotics. Josiah worked on the programming division last year and helped build the button board that interacted with sensors and helped us win the Autonomous Award present by Ford Motor Co.
FUN FACT: Josiah has been to Mexico, Wisconsin, and Texas.

THUNDER TORTOISES

Preseason Training Group #2

BETA PROTOTYPING

Our Beta Prototype was an evolution from our Alpha prototype, but did not change significantly. The mechanism frame is slightly bigger and there is a slot for the pneumatic piston which now opens and closes a vertical gate to hold a group of balls in a hopper until they are in position to score. Human players, at the corner of the field, will load the hopper manually and there is still a collector to be built to pick up stray balls. A plow to push balls is still a work in progress.



DESIGN ITERATIONS

We iterated on our beta prototype by adding a plow to the back of the our wooden mechanism structure (in brown). A ball collector, yet to be built, will suck up the balls from the front and move them to the main storage hopper on top. We added a base to our mechanism structure to make it easy to attach to the mini robot

MEMBER SPOTLIGHT

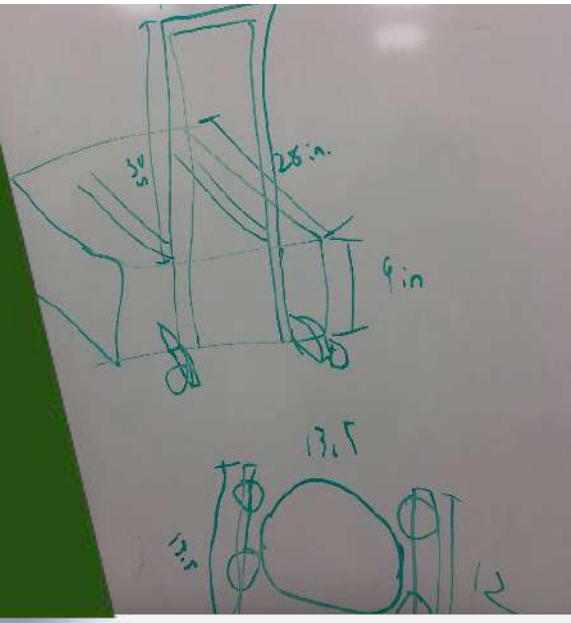
Nina Kessler is a sophomore in the Build Division and is returning as a veteran. Nina joined because robotics like seemed fun and she had friends on the team. Nina enjoys playing guitar, bass, and ukulele.

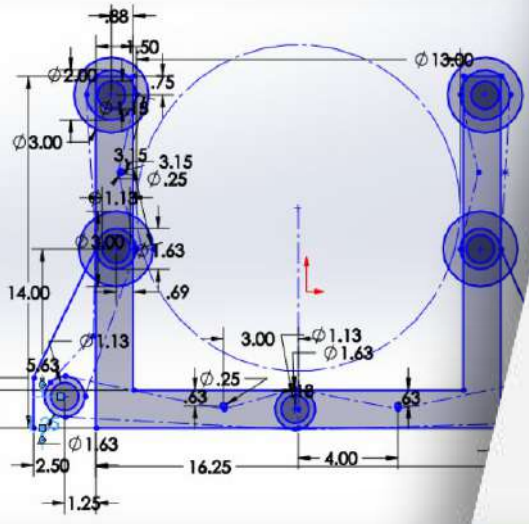
TATE & EVERYONE ELSE

Preseason Training Group #3

BETA PROTOTYPING

Team Tate and Everyone Else has completed making the elevator mechanism to score with game pieces. Using a series of motors and pistons, the elevator is able to pick up game pieces from the ground, because we predict the most COMPONENTS and ACCELERATORS will be found on the ground during the competition, so it was vital for us to be able to collect from there. Currently, the elevator can score an ACCELERATOR in LEVEL 2 of the TOWER. Team Tate and Everyone Else predicts that we will be able to begin testing as early as this week.





DESIGN ITERATIONS

Originally, Team Tate and Everyone Else was going to have a claw elevator combo. During the fabrication process, we found building our original claw was not what we wanted so we changed the design (see CAD model to the left) and made it better. We decided to make the sides the same length instead of having one side be shorter than the other. The elevator uses a combination of motors and pistons to collect game pieces from the ground and deliver them to the TOWER and FACTORY.

MEMBER SPOTLIGHT

Catey Chastain, a new recruit to Team 3100, is eager to learn all she can about everything the team's divisions have to offer. She now thinks she wants to join both the Build and Design Divisions. Inspired by her brother's zeal for graphic design, Catey joined the team to pick up CAD experience in the Design division. Through FIRST, she wants to explore the different engineering careers available through talking with her mentors and others. Catey enjoys working with different mediums of art - from sketches on paper to CAD.

FUN FACT: Catey has been playing the violin for the last 6 years.

ERROR [3100] TEAM NAME NOT FOUND

Preseason Training Group #4

BETA PROTOTYPING

We built a frame for out robot mechanism prototype and then moved on to designing our ball shooter mechanism that's built into the frame. We added wheels on axles and then used drills to power them up test the distance a ball could be launched. There was a lot of work determining the correct spacing between the wheels to grab and shoot the ball. We then fully mounted the axles onto our frame to tested our design.

DESIGN ITERATIONS

At the beginning of our prototyping, we wanted to make a moving shooting mechanism. We found that it would be easier to put the shooter inside our mechanism frame and shoot from there instead of moving it out and then shooting. We have completed our alpha prototyping and are working on perfecting our main shooting mechanism that will serve as our way to obtain all of our game scoring points.

MEMBER SPOTLIGHT

This week's member spotlight, is Quan! He's a Senior and a 3 year veteran of the team. He does design, electrical, and fabrication.

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