

FRC 3100 LIGHTNING TURTLES



Build Season Week #3 Newsletter
January 26, 2020

**In House
Fabrication is
helping us move
right along!**



2020 BUILD SEASON

WEEK 1: 1/04 - 1/12
INFINITE RECHARGE Kickoff &
Prototyping

WEEK 2: 1/13 - 1/19
Design Finalization
Collector & Begin Robot
Fabrication

WEEK 3: 1/20 - 1/26
Design Finalization
Shooter & Climber
Component Fabrication

WEEK 4: 1/27 - 2/02
Fabrication Completion
Full Robot Assembly
Component Programming

WEEK 5: 2/03 - 2/09
Full Robot Program
Integration &
Autonomous Routine

WEEK 6: 2/10 - 2/17
Drive Team Tryouts
Final Preparations
Week Zero Event

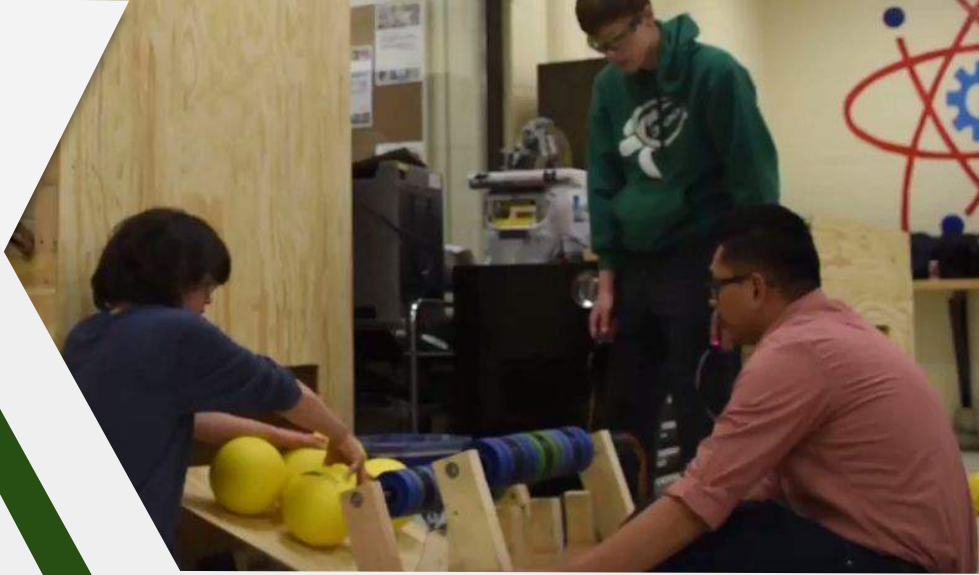
INSIDE:

| | | |
|---------------------|-------|------|
| Shooter | _____ | PG 1 |
| Climber | _____ | PG 1 |
| Tools | _____ | PG 2 |
| CNC | _____ | PG 2 |
| Student Spotlight | _____ | PG 3 |
| Design Finalization | _____ | PG 3 |

Mechanisms

Shooter

We have made significant progress on our shooting mechanism. It is now capable of shooting 5 balls at a fairly quick pace. The goal now will be improving upon the rate of fire as well as the consistency from multiple locations on the field.



After trying many different prototypes, we settled on a double-axle shooting system. Similar to a baseball shooter, this means that there are wheels on both sides of the shooter to help the ball fly up into the air.



Climber

After further progress with climber prototypes, the team has decided on a motor-driven design as our way to lift and lower the robot. Our next steps will be to evaluate different hook and movement devices to interact with the dynamic climbing pole.

Fabrication for some of the core climber components have begun, while other parts of the climber system are still under prototyping and development. The reason why the climber system is still in development while other parts of our robot have been designed is because the system must be able to fit around the rest of the robot, meaning that it's harder to lock down a final design until the rest of the robot has been designed and we better understand the space available for the climber system.



Component Fabrication

We have made a ton of progress fabricating more and more pieces for our robot. The general shape is finally starting to come together.



New Semester for our Students

Our students have just started their second semester. That means new classes and new class schedules. But even though their new schedules may throw them off a bit, the one constant they can look forward to is Robotics!



CNC Work!

This week our students worked to finish fabricating the metal parts of our Collector through the use of our three CNC machines. CNC stands for Computer Numerical Control. CNC machines use CAM programming to take CAD files and make them into precise physical parts. Some students have had the opportunity to work with our mentors and experienced veterans to learn how to operate these machines.

With the fabrication progress we've made so far, we are excited to assemble the subsystems and start testing our final robot design!



Sponsor Spotlight & Learning on the Job



Sponsor Spotlight

Our sponsor spotlight this week is ECOLAB! As well as providing us with amazing mentors, they have recently been fabricating parts for our robot that we cannot make with what we have in house.

Their continued support is keeping this team going strong, and we are extremely thankful for their willingness to help and provide support when we need it. Thank you ECOLAB! We look forward to your continued support.

Learning on the Job

Over the course of this past week some students have been pairing off with mentors and experienced veterans to learn the ins and outs of operating the three CNC machines we have in house: the CNC Plasma Cutter, CNC Router, and the CNC Mill. Students have been learning the basics of how to zero and move the machine, and even operate it with help. Thanks to all of their hard work, we have finished the fabrication processes for the parts of our Collector.



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