

Our 2019 Build Season
by Week



Henry Sibley High School

Lightning Turtles Robotics

Build Season Newsletter Week #3

January 20th - January 26th

FROM CAD TO FAB



We've learned from the past and have been much more detailed, meticulous and organized in our design process this year.

1

Week 1

- Kickoff
- Strategic Design
- Prototyping
- Drivetrain
- CAD Design

2

Week 2

- Finalize Subsystem
- CAD Designs
- Begin fabrication

3

Week 3

- Final Fabrication
- Drivetrain complete
- Begin Assembly of Subsystems

4

Week 4

- Finish Assembly of Subsystems
- Program Subsystems

5

Week 5

- Build Second Robot
- Full Robot Program Integration

6

Week 6

- Full Autonomous Programming
- Programming Tuning

INSIDE:

MEET OUR MENTORS

CULVER'S FUN(D) RAISER!

CAD to FAB

STUDENT SPOTLIGHT

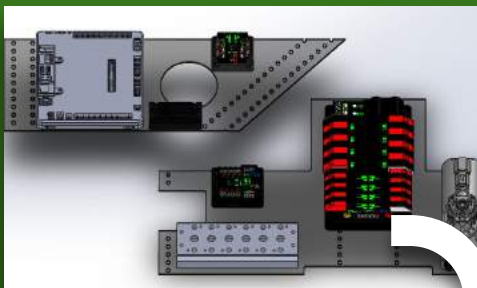
ELECTRICAL & PROGRAMMING EXCELLENCE

COMPETITION PREP & TEAM FUN

Raising Funds and CAD2FAB!

Culver's Fun(d) Raiser!

Thanks to family, friends and Facebook fans, the team raised hundreds of dollars for our Build Season at our Culver's fundraiser and delivered hundreds of Butterburgers and mountains of custard to customers from West St Paul and Mendota Heights. We had long lines, and kids and adults loved interacting with the students & robot.



CAD to FAB

This year the team decided to make our design process more organized and automated. This included creating CAD for automated manufacturing and tracking via spreadsheet by subsystem. Once a CAD part has been reviewed, it's converted into a G-code file which tells the machine where to cut/drill. We then load the machine with the desired raw material and it fabricates the part to the specified design. Now the majority of our parts are made on CNC (computer numeric control) based machinery which makes all of our parts exactly the right size meaning they all fit together and work the first time.

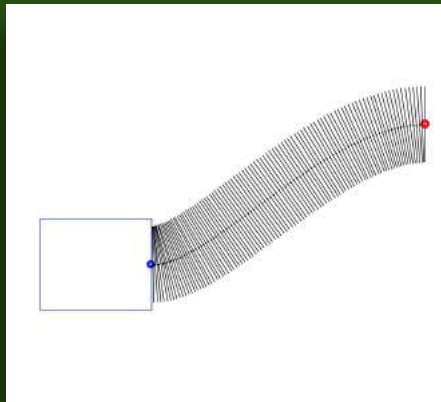


Quality in Control Systems!

Programming Progress

Our programming team has been working hard to programmatically automate many recurring tasks our robot needs to complete.

One such feature, pictured below, is utilizing a variety of sensors on our robot to automatically plot and follow a curved line, or spline, to deliver and score with game pieces.



Electrical Excellence

A high-performance robot requires a high performing electrical system. Our electrical division has been meticulously focused on the little details when it comes to pneumatics, soldering, and wiring - all for an organized, well-tuned robot.



Meet our Mentors:

Conor - Fabrication Mentor

Q1: Why did you become a mentor for the team?

A1: I showed up to the Ecolab robot demonstration and asked a lot of questions and no one else asked any and I realized I should become a mentor.

Q2: How has your experience with the team changed you?

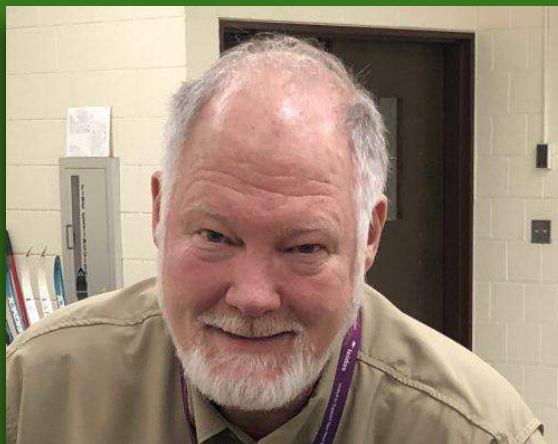
A2: It made me realize all the things I didn't know about mentoring and teaching and how much I still need to improve on.

Q3: What is your favorite Lightning Turtles success?

A3: It was actually getting all four ranking points in one of our matches which showed how competitive the team has become.



Eric - Programming & Sensors Mentor



Q1: Where do you work?

A1: I work for Leidos, a government subcontractor, as a software engineer.

Q2: Where did you go to college?

A2: I went to Saint Olaf in Northfield MN.

Q3: What is your favorite part of mentoring?

A3: Seeing the students get excited from learning new things.

Q4: How did you find out about Team 3100?

A4: I've been involved with FIRST for a long time. I attended the Culver's Fundraiser last year and introduced myself to the team and the rest is history.

Fundraising for 2019: We have a goal to raise **\$40,000** and we're over 85% of the way there! Please see the last page for info on how you can sponsor us!

Student Spotlight

Madi



Q1: What grade are you in?

I am a senior.

Q2: What is your favorite part of being on the team?

My favorite part of being on the team is going to the competitions, hanging out with my friends, while seeing all of the team's hard work pay off.

Q3: What's your specialty on the team?

I specialize in CAD. My nickname is the CADerpillar...

Q3: What is your favorite place that you've traveled to?

My favorite place that I've visited is Universal Studios on a family trip.

Fun Fact While on a family trip Jimmy Fallon showed up in disguise on the other side of the pool she was at to film a skit for a ride in Orlando!

Arielle

Q1: What grade are you in?

I am a sophomore.

Q2: What do you like about robotics?

I have become way more comfortable around major fabrication machines.

Q3: What have you learned at robotics?

I like to be hands on and I was taught how to use fabrication machinery and silk-screen tshirts

Q4: What is your favorite part of robotics?

My favorite part of robotics is learning how to memorize things and how to do things right the first time.



Jacky



Q1: What grade are you in?

I'm a Freshman

Q2: Why did you join Robotics?

My dad wanted me to join an after-school activity so I picked something I was interested in

Q3: What do you like about Robotics?

I like building almost anything

Q4: What's the hottest thing you've ever eaten?

It was this crazy hot ramen, I took one bite and I was washing my mouth out with milk for hours

Fun Fact: Jacky has the highest rookie build season attendance at 111% (Saturdays are bonus days)

DEEP SPACE CREATIVE COMPETITION PREP

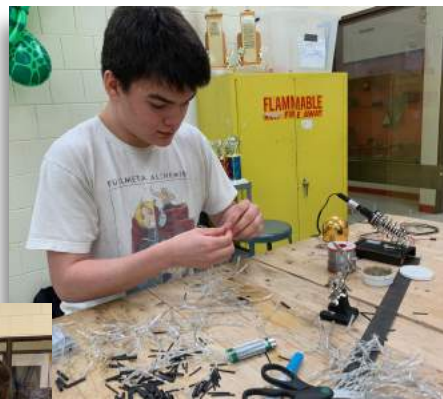
Pit Prep Our competition pit (the structure we set up as our base of operations at each competition) was checked for safety and designs were reimaged for #DestinationDeepSpace



Planet Prep Space? Planets? We truly believe those go together!



Nebulous Numbers Preparing for our Fans-in-the-Stands Launch Sequence - By the Numbers



TEAM FUN!



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