

THE NUTS AND BOLTS

TECHHOUNDS NEWSLETTER - 01/11/2019

Kickoff

On January 5th, over one hundred various students, parents, and mentors crowded into a sweltering room to witness the TechHOUNDS' 17th annual build season Kickoff. Team members gathered to watch a livestream from FIRST headquarters in New Hampshire, streaming to thousands of other robotics teams around the world. This year's theme is a tribute to the 50th anniversary of the Apollo Moon Landing, appropriately titled DESTINATION: DEEP SPACE.



A group of students forms ideas for this year's game.

Hosted by Dean Kamen, co-founder of FIRST, the livestream unveiled the objectives of the competition for the first time. Over the course of the stream the official rules were released, followed by videos explaining each component of the new playing field. The TechHOUNDS wasted no time setting up a brainstorming forum immediately after the stream's conclusion, breaking down this year's game manual into bite-sized chunks. "I think the brainstorming session went pretty well," noted Ryan Forrest, the Electrical and Programming co-lead. The Kickoff signals the beginning of the six-week build season. Students will continue to work after school from 3:00 to 6:30 up until "Stop Build Day" on February 19th.

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UPCOMING EVENTS

- Stop Build Day 02/19/2019
- Women in Technology Workshop 03/02/2019
- Tippecanoe Event 03/23-24/2019
- Center Grove Event 03/29-30/2019

This Year's Game Breakdown: **DESTINATION: DEEP SPACE**



Drive teams will be "blinded" for the first 15 seconds.

The theme for the 2019 FIRST Robotics Competition is **DESTINATION: DEEP SPACE**. Six teams form two alliances, each of which have two minutes and thirty seconds to transport and secure as much "cargo" as possible in their designated locations.

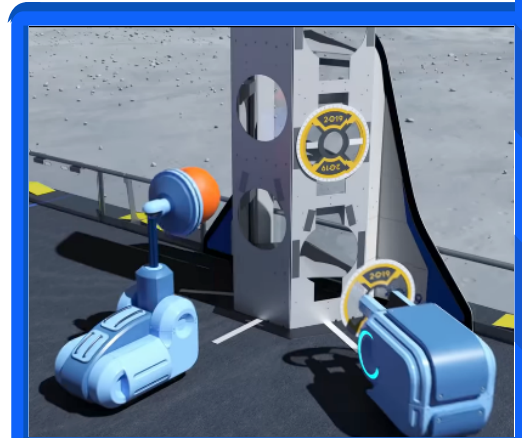
The playing field consists of two rocket ships and one cargo ship per alliance. Game pieces include "cargo" (large dodgeballs) and "hatch panels" (circular panels acting as doors) that secure the cargo within the spaceships. If a hatch panel is not secured to the respective spot on the ships, the cargo will not be secured and no points will be scored for the alliance. Each rocket ship holds six spots for cargo and hatch panels, while each cargo ship holds eight spots.

Each robot starts in a "habitat" - a platform with pedestals of varying heights. Robots begin the game with one game piece on either the lowest or middle pedestal. The first points of the game are earned when each robot leaves their pedestal. Robots cannot begin the match at the highest level pedestal; successfully exiting the habitat from the middle pedestal earns their alliance six points, while a robot leaving from the lowest pedestal earns three points.

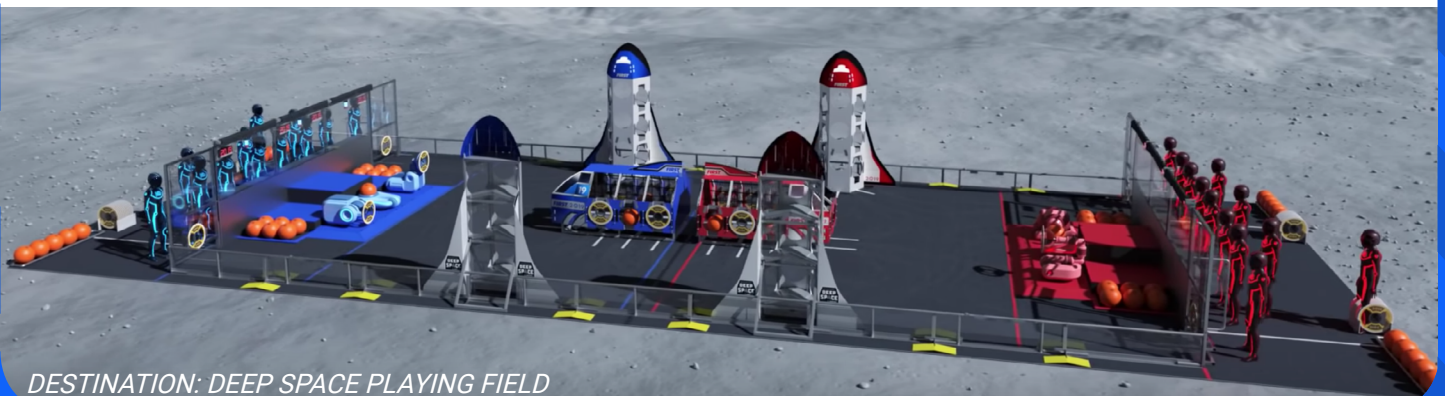
During the first fifteen seconds of the game, teams experience a "sandstorm," during which a black screen prevents the people controlling the robot from viewing the playing field. In order to circumvent this disadvantage, teams may pilot the robot using an attached camera or program the robot to drive autonomously. Following the sandstorm, drive teams have the remaining two minutes and fifteen seconds to control the robot and earn as many points as possible.

Each hatch panel secured earns the alliance two points and each piece of cargo stored earns the alliance three points. Alliances store untransferred cargo in depots in front of their driver stations. Additional hatch panels and cargo are stored behind the driver stations, and can be sent through a slot to the playing field by a human player. An alliance gains a ranking point when their respective rockets are filled with cargo and every panel on the rocket is secured. This ranking point is added to each team's overall competition ranking.

The last points of the game are earned when the robots return to their habitat. Points are awarded depending on the height of the platform: twelve points for the top pedestal, six points for the middle pedestal, and three points for the lowest pedestal. The alliance with the most points at the end of the match wins.



Animated robots placing cargo into the rocket.



DESTINATION: DEEP SPACE PLAYING FIELD

MEET OUR TEAM

A weekly showcase of the members & mentors who make our team tick.

WHAT MADE YOU WANT TO JOIN TECHHOUNDS?

I thought that the experiences would be helpful for possible future careers. It also looked like a fun way to be a part of a team and learn new technical skills.

SO FAR, WHAT'S THE MOST INTERESTING THING YOU'VE LEARNED?

I've learned how to use a lot of new machines, including several different drill presses. I've also learned how to use engineering programs like AutoDesk Inventor to design 3-Dimensional models, helping me understand the design process.

LUCAS CACULA ROOKIE



WHAT ARE YOU LOOKING FORWARD TO DOING?

I'm looking forward to being a good part of the team, trying to help out and hopefully having an impact on the final robot design.

WHAT IS THE MOST IMPORTANT THING YOU LEARNED FROM TECHHOUNDS?

I have learned that in order to accomplish the team's goals, you have to divide labor. For example our Robot Ops lead Derek has a list of things that need to be built for the robot, and then he divides the tasks among a couple of subgroups. Each subgroup helps our division cohesively work together.

DO YOU HAVE ANY WORDS OF ADVICE FOR ROOKIES?

Just try to get involved as much as possible, because when you know what you are supposed to do, you can lead other people later on.



WHAT HAVE YOU LEARNED FROM TECHHOUNDS THAT YOU WILL BE TAKING TO COLLEGE?

Well, I learned how to build a robot. It requires team effort, and help from different divisions—all the work is not done by one person. We have many divisions, all of which are really important; there is no singular superior division. We all rely on each other, and that's one of the most important things that I learned.

NIKITA VARFOLOMEEV 4TH YEAR

WHAT DOES BEING A MENTOR ENTAIL?

I mainly work with the Construction division. My primary focus is that the students have the tools and the knowledge they need to be safe and have fun. They are learning proper use of the tools and are learning how to work together.

WHAT IS YOUR FAVORITE PART ABOUT BEING A MENTOR?

My favorite part is watching the students grow in their knowledge, their comfort level, and their confidence, in not only working with tools, but how to use those tools to complete a project. I also love working on developing leadership skills and building up the students so we can prepare future leaders of the divisions.

WHAT IS YOUR PROFESSION?

The easy answer is I teach nature education, and another aspect is that I teach teachers in nature education.



MR. CUNNINGHAM MENTOR

DIVISION UPDATES

This week in Robot Ops, we drew up prototype ideas, started brainstorming, and began the process of discussing various strategies.

We then manufactured some of the prototypes and experimented with different ideas in order to find the most effective designs.



ROBOT OPERATIONS



PUBLIC RELATIONS

This first week of build season, PR members have gone far above my expectations finishing everything we have planned. This week we worked on creating images for computer backgrounds, taking photos, designing spirit wear, and creating the newsletter you are currently reading.

This week in Construction, we set down the building blocks for the playing field.

This includes measuring out the dimensions of pieces of wood and cutting them out. We completed this process for the two-by-fours and are currently working on plywood.



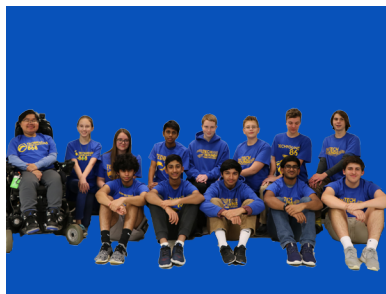
CONSTRUCTION



PROGRAMMING / ELECTRICAL

This week in Programming/Electrical, we got our vision cameras working and figured out the proper placement for them. We worked on our operator console and sensors, and we started working on our new CAD project.

This week, IT developed the official scouting system from scratch and was able to compile a plethora of algorithms to figure out how we want our scouting system to function.



INFORMATION TECHNOLOGY



TEAM LEAD

This week, the team has been working on designing and prototyping parts of the robot, website design, media pieces and the practice field. These first days are the most fun to watch because each division is bursting with creativity and bringing in new ideas. Keeping this momentum will be key to our success as a team this year.

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