

THIS MONTH:

INVENTORY

Team 501 members spend time recycling parts for an inventory ahead of ordering new parts for the season

[Page 2](#)

COMPONENTS

Design and building robot components takes multiple disciplines. Here's how Team 501 makes it happen.

[Page 3](#)

WEEK ZERO

Week Zero event on Feb 15th allows teams to get early experience. 501 was there.

[Page 5](#)

SPONSORS

New and renewing sponsors join the rejoin the PowerKnights family in February.

[Page 8](#)

SEASON CALENDAR

Get the latest information about this years competitions and team events.

[Page 9](#)

THE
POWERKNIGHTS
ROBOTICS TEAM

Connect with The PowerKnights





4th year & graduation senior team member Thomas Murray takes apart about 100 wheels.

Inventory & Recycling

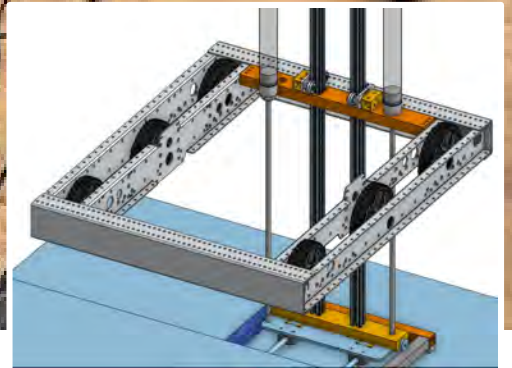
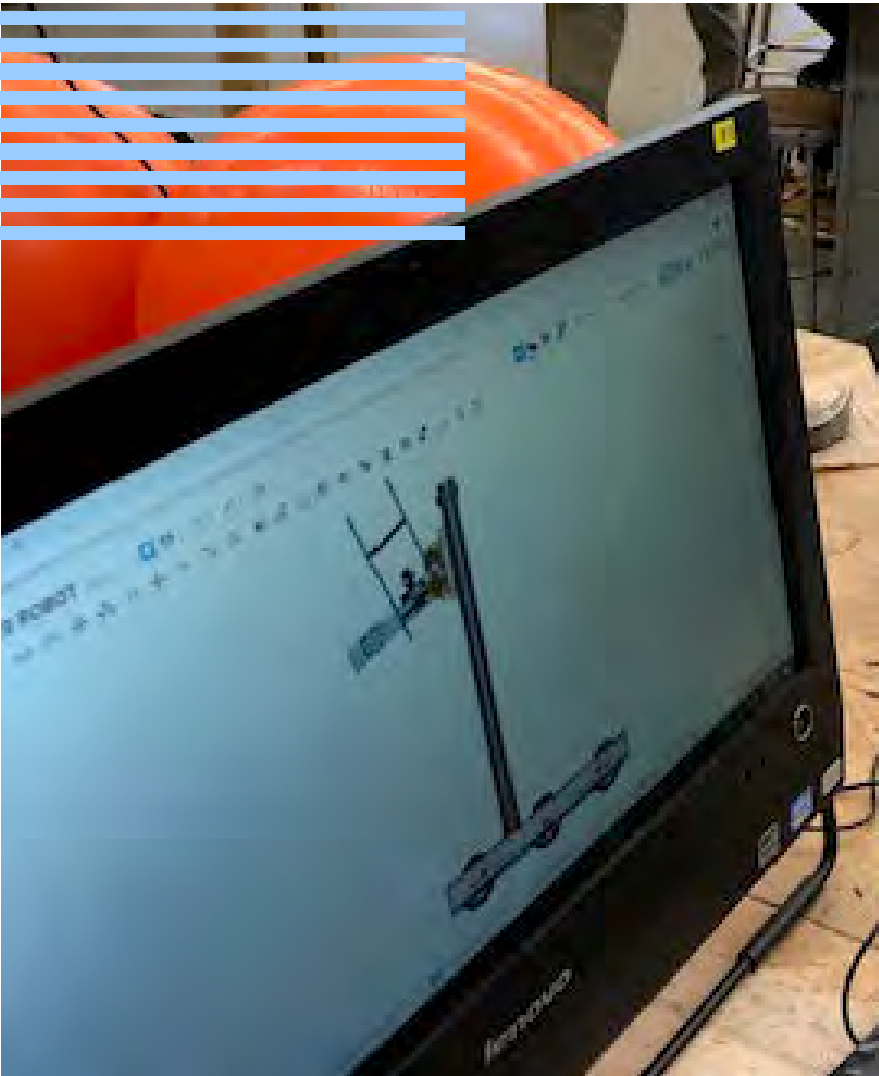
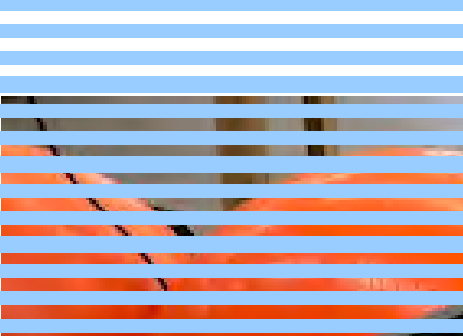
February 3rd | GHS Woodshop & Build Space, Goffstown, NH

The average FRC competitive robot has over 1500 parts. From wheels (dozens of styles / functions) to gears, spacers, screws, bolts, wires, clips and a few motors. Every year as part of the start of build season, while we're still working on designs, some of our team members take on the very tedious task of recycling parts from old robots and doing an inventory of parts and materials. This helps us order new parts wisely and allow us to focus on primary objectives of the robot – working!

TOP: Wheels, Wheels, Wheels.

MIDDLE: the little box of machine screws.

BOTTOM: 1st year team member Emily Charles organizes the gear box. Matching precisely the various pieces by size, depth, # of teeth and angle.



Early draft of CAD of the full robot. Team was experimenting with an idea around using the sliding lift for the cargo and hatches to serve as Hab Climber also.

Designing Components.

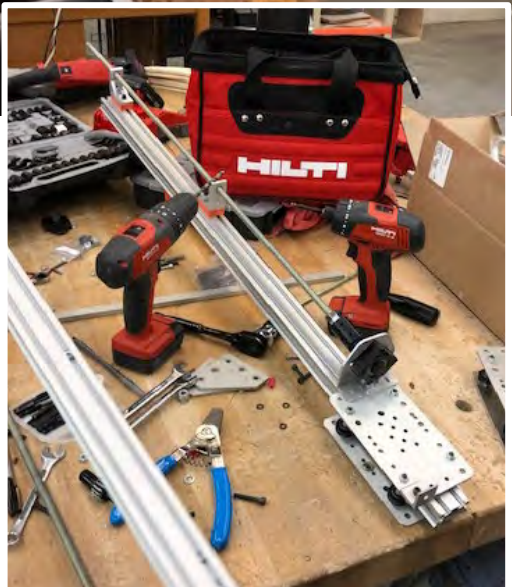
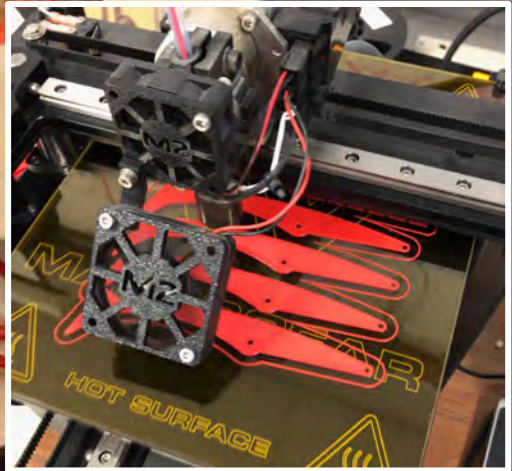
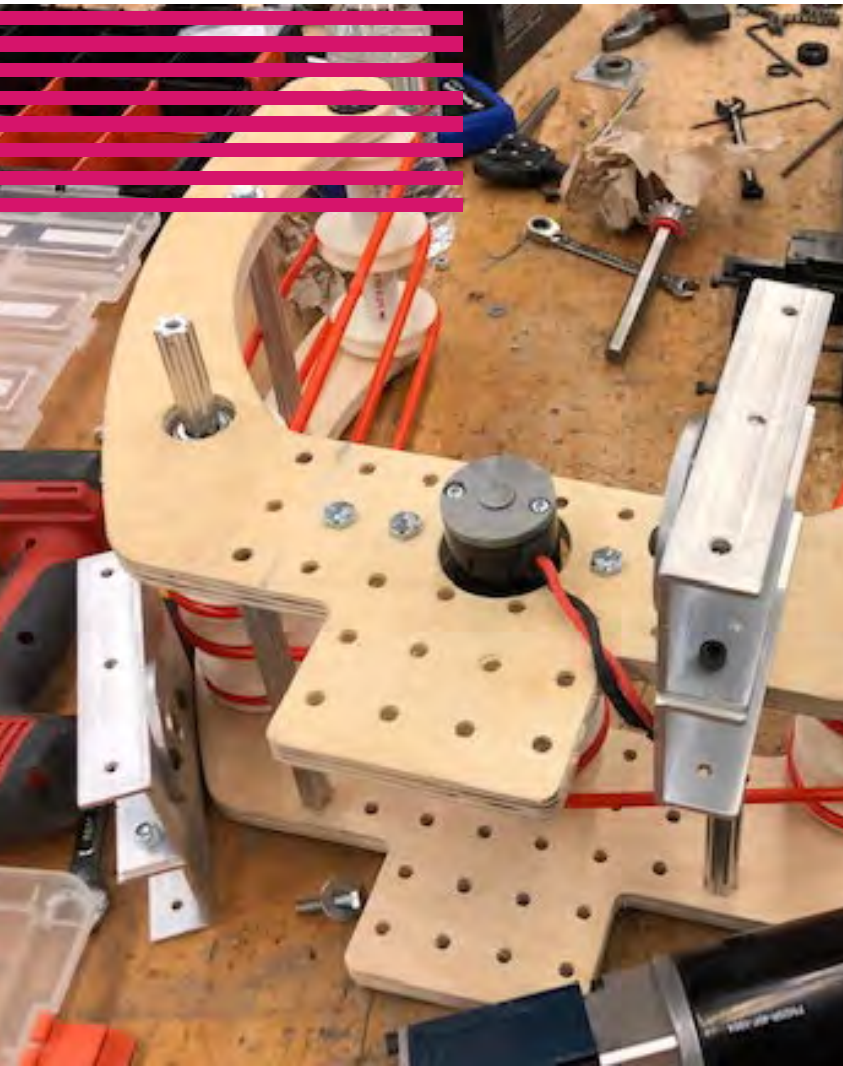
February 2nd | GHS Woodshop & Build Space, Goffstown, NH

First weekend of Build season usually includes a lot of white boards and chicken scratch drawings. (You'd think there was a mad professor running around writing formulas on the chalkboard.) but once prototypes start to materialize, the team quickly moved to CAD-based designs to make sure each component can fit as part of the master plan. Chassis and Integration team have the responsibility to make sure all the components are designed to fit together (and then actually do!).

TOP: Caleb Hagner working on chassis and lift assembly sub routine programming.

MIDDLE: Prototype design for lift assembly that slides robot onto 3rd level HAB platform.

BOTTOM: Cargo and rocket hatch panel grabber mechanism.



Robot Integration.

February 12nd | GHS Woodshop & Build Space, Goffstown, NH

One of the best part of the build season is when robot components start to come alive and find their place on the main build. Each function team (Lift, Arm Mechanism, Climber, etc.) works to build their component as part of the master robot configuration. Once each version of the component are built, The Chassis & Integration team pulls it all together and makes it all work and fit together.

TOP: Integration team working with the programming team to get the lift to work.
MIDDLE: Printing parts for a prototype. Didn't actually end up making final design.
BOTTOM: Slide mechanism for the three stage lift. Notice one of the two (2) 12V 3 tool cordless combo kits generously donated by HILTI





Quarter 2 Match 3 underway, as Team 501 Robot drops off cargo on the near rocket. Alliance 4 Partner 1729 picking up cargo on the far side. We ended up winning this match 33-6

Week Zero.

February 15th | Merrimack High School, Merrimack, NH
Week Zero provides local teams with the opportunity to test out their robots and make field level changes and updates real-time, while getting an early chance to really interact with the field. It also provides FIRST with their first chance to really push the field with real teams/alliances.

Results: Semifinals

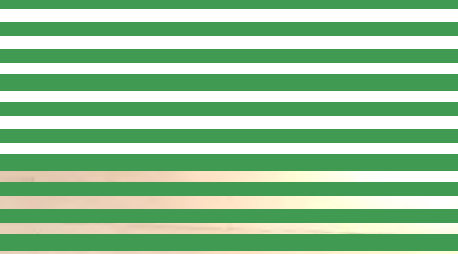
Selected: Alliance #4

Overall Record: 3-6

<https://www.thebluealliance.com/event/2019week0>

TOP: Robot ready for action sitting on Level 1 of the HAB going into "Sandstorm".

BOTTOM: Cameron LePine and Shawn Stewart get the Robot ready for action during Qual 8 match.



Team takes a minute to pose with the robot following Week Zero event and before it gets bagged, a few days later.



Ready for Competition.



February 16th | Goffstown High School, Goffstown, NH

Week Zero, Check. Robot Bagged, Check. Travel & Logistics planned for District Events, Check.

Season T-Shirts are ready and at the printers with Astro-Knight gearhead designed by 1st Year Student member Emily Charles. Can't believe what amazing support our sponsors / donors have provided to the team this year, had to make room for 19 logos/names So proud to be wearing these and sharing with sponsors, donor and community partners.

Team 501 is ready to go!. Anticipating the start of Week 3 event @ North Shore District Event in Reading, MA

See you there.



TOP: Team 501 Season T-Shirts featuring Traditional PK Gearhead with game specific astronaut design and "NASA" inspired fonts.

BOTTOM: Incorporated Destination Deep Space theme/rocket, matched "501" numbering to the All Systems Go typeset along with sponsor logos and rocket taking off.





Cameron Miles, Team President Ryan Marchesseault and Nathan Marchesseault clip the OFFICIAL FIRST Tag to the robot bag.



TOP: Cameron LePine doing his best impression of the cargo arm mechanism after the Robot is bagged.

MIDDLE: That's a big bag. For a big robot.

BOTTOM: Taking pictures with timestamp during the bag & tag of this season's robot.

Bag Day. We Got This.

February 19th | Goffstown High School, Goffstown, NH

It's done. Final bag and tag of the Robot occurred on February 19th @ 9:55pm. (Didn't wait till midnight). While team took the time to celebrate a productive build season while bagging (literally) the robot it was a bittersweet moment. Next year, FIRST has done away with the build season timeframe and bagging day. Teams will be able to keep building right up to the events.

We might miss this "right of passage" next season.

New Sponsors, Donors and Community Partners in February 2019!

It is our great pleasure and honor to welcome new and renewing team 501 sponsors, donors and community partners to the PowerKnights family. We greatly appreciate all of your efforts and generous donations. Please give us feedback on the newsletter and what you want to hear from us.

2019 Season PK Community Partners

Putnam Fuel Co Inc.*
 Louis P. Cote, Inc.*
 Arlene Creeden*
 Aubin Hardware* (EXTENDED 3yrs!)
 Dude's Barbershop*
 Best Door and Lock LLC
 John Grenier, Sr
 Choice Metals Inc.
 Super Graphics LLC
 Liberty Press
 G&G Tool & Die Corporation
 Baseball Barn
 Duval's Towing and Garage, LLC
 Podem Associates, Inc.
 Aurum Recovery (NEW!)
 Jake's Bike Shop (NEW!)
 Lemay & Sons Beef "The Steak Out"(NEW!)
 KRG Motorsport (NEW!)
 KC's Rib Shack (NEW!)
 Tano's Pizza (NEW!)
 Jacques Flower Shop (NEW!)
 Goffstown Area Orthodontist (NEW!)

GOLD



SILVER



BRONZE

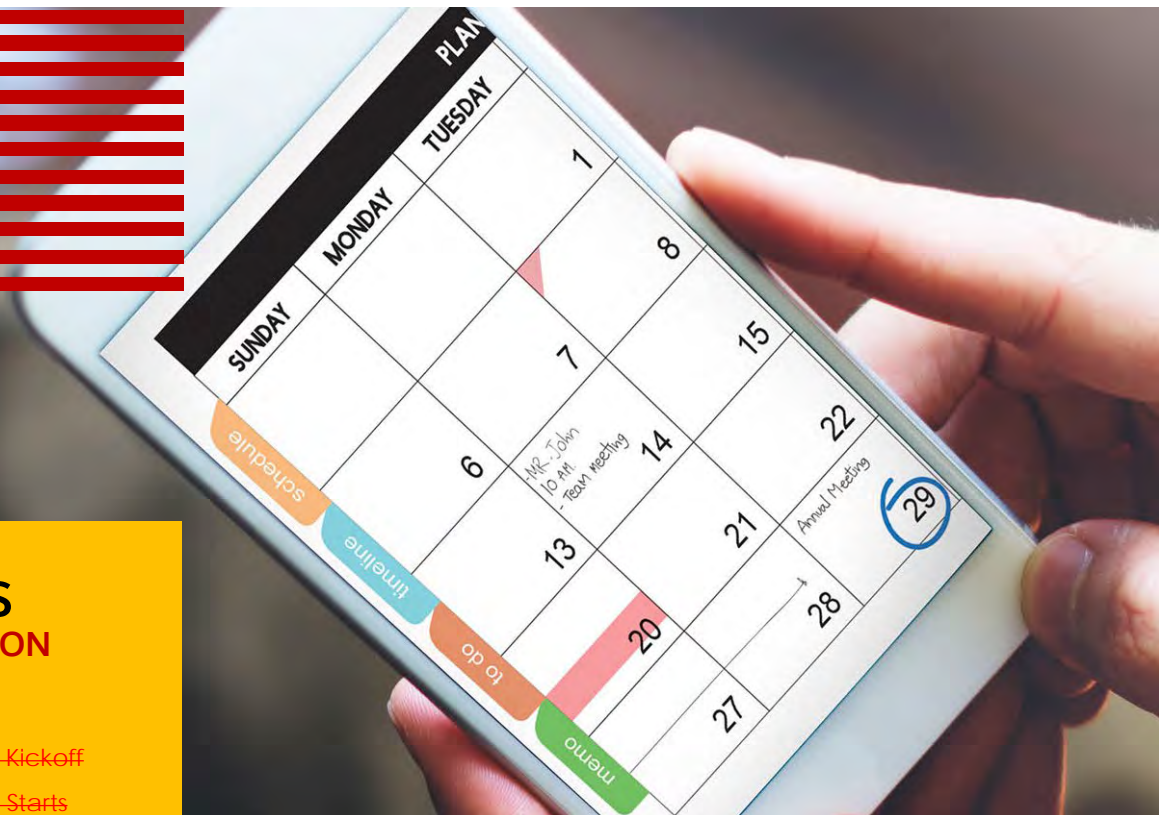
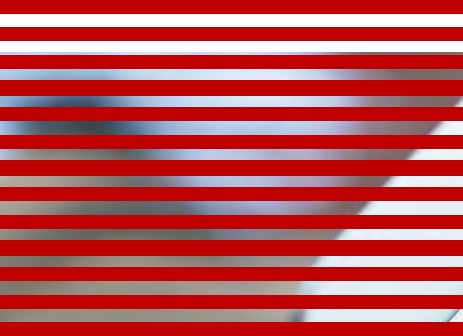


PATRON



DONORS





KEY DATES 2019 FRC SEASON






- JAN05 | 2019 Season Kickoff
- JAN07 | Build Season Starts
- FEB16 | Week Zero Event
- FEB19 | Bag & Tag Robot
- MAR16-17 | NorthShore Event
- MAR30-31 | UNH Event
- APR10-13 | NE District Champs
- APR24-27 | World Champs

UPCOMING EVENTS

MARCH 2019

-  **3.13 | All Team Meeting (Goffstown H.S.)**
Full team meeting with student members and parents.
-  **3.16-3.17 | NorthShore District Event (Reading Memorial High School in Reading, MA)**
Week 3 Event, First event for Team 501. 36 teams
<https://nefirst.org/event/ne-district-north-shore-district-event/>
-  **3.19 | FUNDRAISER: CHIPOTLE (Bedford, NH)**
4-8pm TUE 3/19 at Chipotle on 2nd Street, Bedford 
-  **3.30-3.31 | UNH District Event (UNH Whittemore Center, Durham, NH)**
Week 5 event, one of our favorites.
<https://nefirst.org/event/ne-district-unh-district-event/>

APRIL 2019

-  **4.10 | All Team Meeting (Goffstown H.S.)**
Full team meeting with student members and parents.
-  **4.10-4.13 | New England District Championships (WPI, Worcester, MA)**
Top 60 ranked and Chairman's Awards compete for a chance at World's
<https://nefirst.org/event/ne-district-new-england-district-championship/>
-  **4.19 | FUNDRAISER: Red Robin (Manchester, NH)**
5-9pm Friday 4/19 at Red Robin in the Manchester Mall 
-  **4.24-4.27 | Detroit World Championships (Detroit, MI)**
Only the Top 15% of ranked teams from New England qualify for World Championships.



OUR AFFILIATIONS

Team 501 is proud to be affiliated with the following key organizations that make it possible for our students to participate in FIRST Robotics Competitions (FRC) each year.



For Inspiration and Recognition of Science and Technology is an international youth organization that operates the FIRST Robotics Competition. In 1989, Woodie Flowers and Dean Kamen became the founders of this amazing organization. Their goal was to teach young and inexperienced kids about engineering and technological skills and fields, as a way to get more of them interested. Today the organization includes a total of 7,000+ teams world-wide.



4-H has a long history of supporting robotics programs through 4-H clubs, after-school programs, camps and curriculum. Through robotics, 4-H'ers learn teamwork, problem-solving, critical thinking, engineering and design. The 4-H robotics program inspires young people and develops an early interest in robotics engineering and technology.



Goffstown High School, located in Goffstown, New Hampshire, United States, serves the towns of Goffstown and New Boston. Goffstown High School joined Manchester West High School in 2007 to form an even stronger award winning team. Go Grizzlies!



Manchester High School West, known as West High or West, is a public high school located in Manchester, New Hampshire. What is today our beloved team 501, The PowerKnights! Was first founded in 2001 Go Blue Knights!



FRC501 The PowerKnights Robotics Team, a 4-H Team
329 Mast Road, Room 101, Goffstown, NH 03045
info@powerknights.com | www.powerknights.com



Connect with us through our Website and Social Media @



VOLUME 1 | ISSUE NO. 2 | FEBRUARY 2019

EDITOR

Patrick Steger

WRITERS

Paige McNamara
Isabelle Steger
Patrick Steger

PICTURES/IMAGES

Darlene Boudreau
Matthew Gleich
Patrick Steger
Stacey Edgar
Derek Wood
Norman A. McElrath
Stu Lewin
Cameron LePine
Shawn Stewart

