

Each season, *FIRST* Robotics Competition teams receive Kits of Parts (KoP). The KoP is not designed to be a "bolt together" solution to play the game, but is a starting point, containing mostly donated components from Suppliers across multiple industries. For technical information about some of those components, visit the [Screensteps repository](#).

[FIRST Robotics Competition Suppliers](#) are an incredibly supportive group who are proud to be involved in the hardest fun you'll ever have! Be sure to thank them when you see them at our events!

Please note, the information on this page is for the past 2019 DESTINATION: DEEP SPACE Powered by The Boeing Company season.

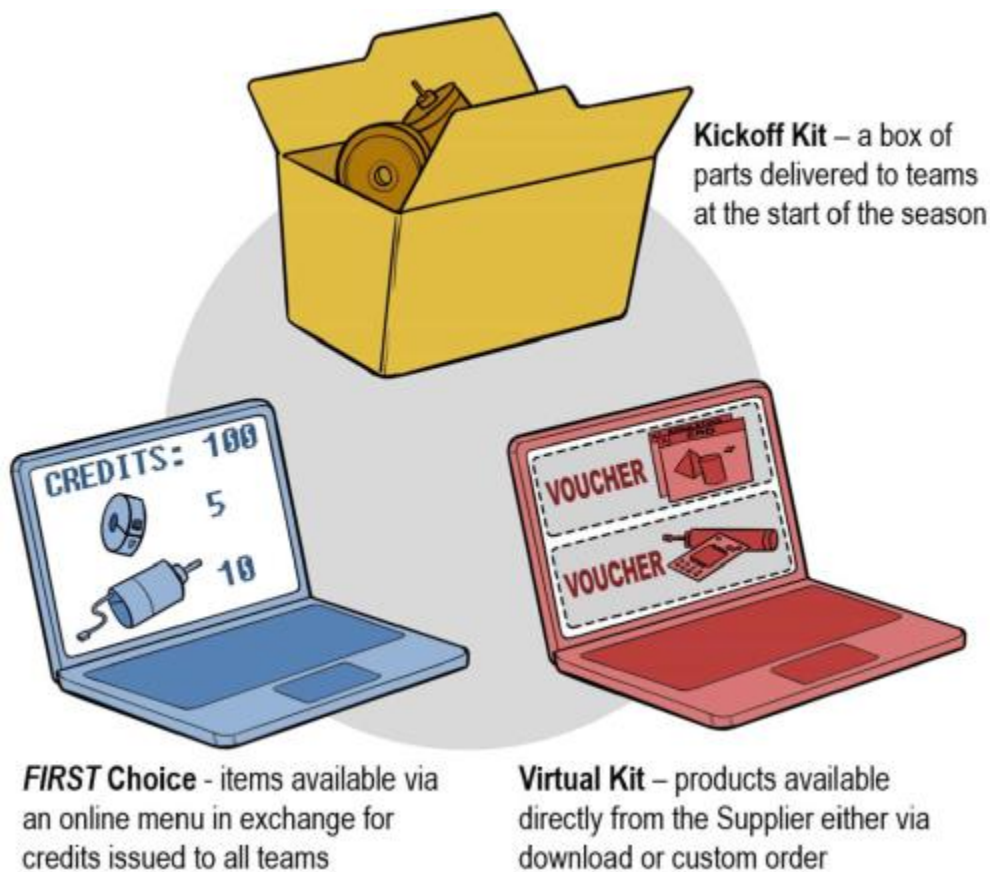
The KoP System consists of three parts, available to teams through a variety of sources.



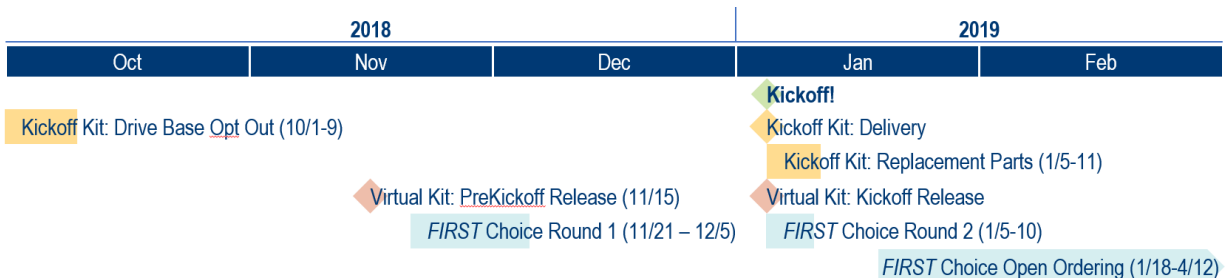
**Kickoff Kit**

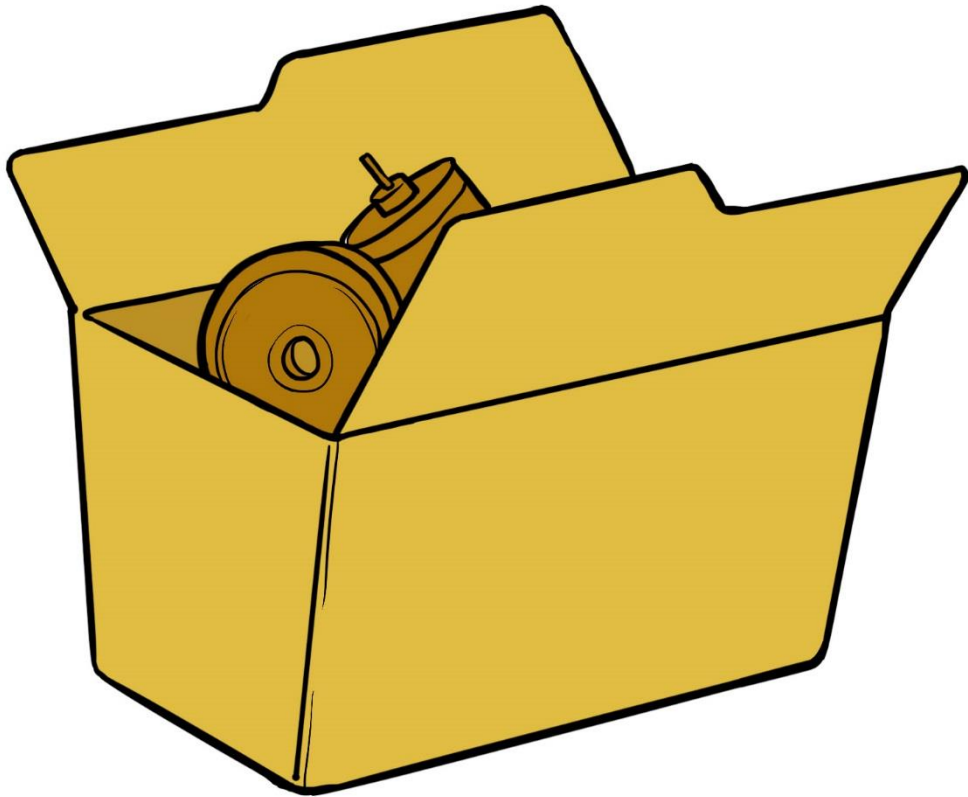
**FIRST Choice**

**Virtual Kit**



## Kit of Parts Timeline: 2019 Season





## Kickoff

### Kit Detail

***A box of parts delivered to teams at the start of the season...***

The Kickoff Kit consists of items that we pack in totes (mostly in totes, there are typically exceptions for late or big items) and distributed to teams on Kickoff at local Kickoff sites (or for those teams that don't make it to a Kickoff, shipped directly to the team at the team's expense, aka MySite shipping).

There are two permutations of this: one set of items that go to *all* teams and a second set of items that goes to 1<sup>st</sup> year, aka "rookie," teams.

#### **Drive Base Opt Out**

"Event ready" veteran teams are invited to opt-out of the Kickoff Kits' drive base kit and instead receive a voucher to AndyMark. Information is here, instructions are [here](#), and the deadline was October 9, 2018.

#### **Kickoff Kit: Size & Weight**

Every team will receive a Black Tote (~12 in. x 27 in. x 17 in., ~33 lbs.) and a set of separate items of assorted shapes and sizes, collectively ~30 lbs. with no one item weighing more than ~14 lbs. Separate items would fit in a backpack if it weren't for a few long (48 in.), narrow pieces.

New ("rookie") teams will also receive a Gray Tote (~12 in. x 27 in. x 17 in., ~34 lbs.) an additional separate item that weighs ~13 lbs.

Teams that did not opt out will also receive a Drive Base Kit (~7 in. x 7 in. x 33 in., ~29 lbs.).

## Checklists

Kickoff Kit contents are detailed in the Checklists (encrypted until after Kickoff).

- [Black Tote Checklist](#) (V1, updated 1/8/19)
- [Gray Tote Checklist](#)
- [Separate Items Checklist](#)
- [Drive Base Kit Checklist](#)

## Missing or Damaged Kickoff Kit Items

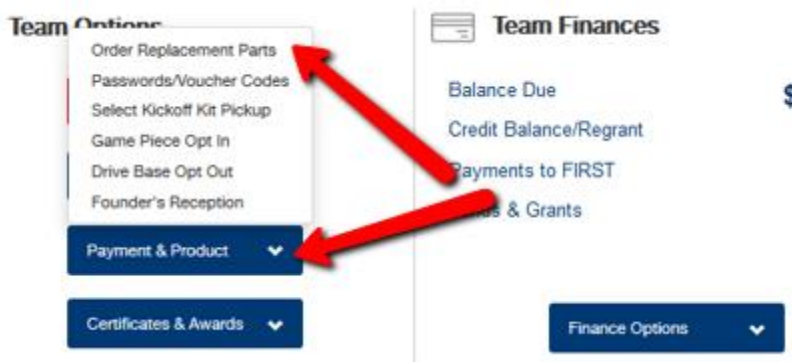
We strongly recommend that one of the first things you do after Kickoff is to inventory your Kickoff Kit. If anything is missing or damaged 1) we're so sorry! and 2) you need to let us know and we'll make it right.

The process we use to get information from you is built in to the registration system and available from noon (Eastern) on 1/5 to noon (Eastern) on 1/11.

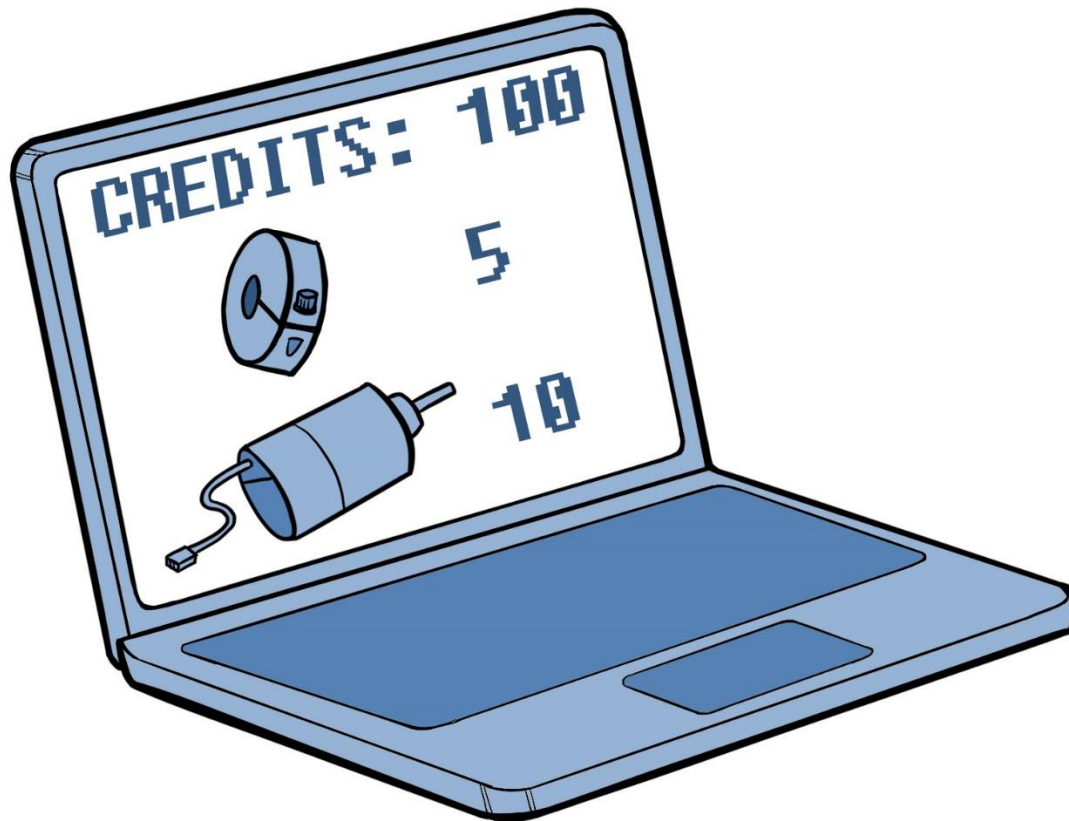
Please know and understand that we will not process requests that don't use this system for teams who received their Kickoff Kits on or before 1/11/19. (If you're a "MySite" team who received your kit after 1/11, please [email us](#) within 2 business days of receipt of your Kickoff Kit with any missing/damaged items.)

To report anything missing or damaged:

1. Your Lead Coach/Mentor 1 or 2 logs in to your team's account.
2. Click on the "Payments and Product" drop down menu and select "Order Replacement Parts"



3. Enter the shipping information for where you'd like the replacement parts sent.
4. Use the "Subkit Container" filter to navigate to the parts you need to report.
5. Click the "Add" button for the item that's missing/damaged.
6. Specify the quantity missing/damaged, include an explanation, and click "Save." The list will auto save when you add an item, so you can come back to it later.
7. Once your list is complete, hit "Submit Request." You can only submit once, and you must Submit before noon (Eastern), 1/11 for your request to be processed.



## FIRST Choice

*Items available via an online menu in exchange for credits issued to all teams...*

**FIRST Choice**  
*Powered by **AndyMark***

Teams get items from [FIRST Choice](#) using either the Priority List system in Rounds 1 and 2 or via a traditional "open" ordering process.

The 2019 *FIRST* Choice process is detailed in a flow chart [here](#) (note that Round 1 Priority Lists are locked on 12/5/18 at noon Eastern and Round 2 lists are locked on 1/10/19 at noon Eastern). (italic text added 12/4/18)

## Priority Lists

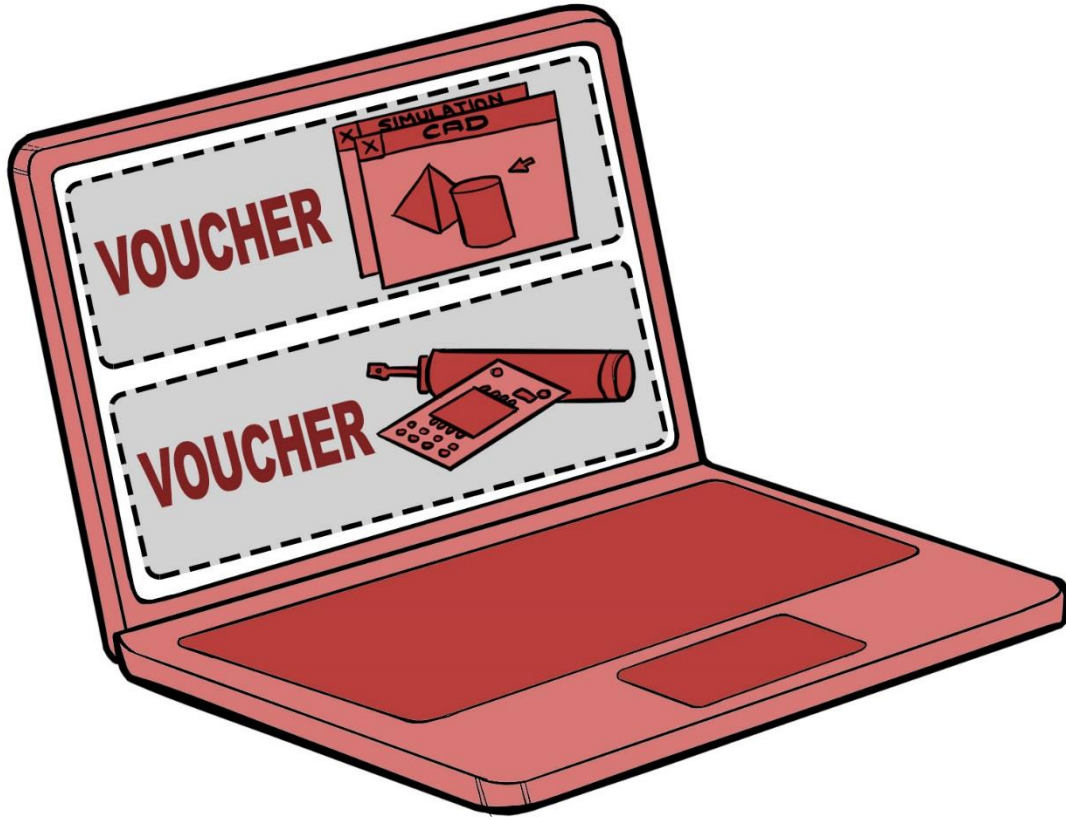
*FIRST* and AndyMark use a priority list system, similar to the event preferencing system, to invite teams to indicate what they'd like and distribute items in a way that doesn't result in a mad cyber rush to get to high value inventory that a typical first-come, first-serve model does.

Here's how it works:

- Each team makes a list & updates shipping detail.** A team creates a Priority List (a prioritized list of *FIRST* Choice items that a team would like) in their *FIRST* Choice account, and the lists are locked at a specific time/date (see timeline above). Shipping charges will apply (details to be posted on the *FIRST* Choice site before Priority Lists are locked), and a billing address, a shipping address, and credit card information must be provided *before* creating your Priority List. Additional charges may apply for international teams, for which the team is responsible, and AndyMark will address on a case by case basis.
  - Login information for the *FIRST* Choice site will be posted in each team's registration account when Round 1 opens and will be viewable by lead mentors 1 and 2.
  - Only event-registered or secured *FIRST* Robotics Competition teams will have access to their login information, and thus only event-registered teams will be able to create and submit a Priority List.
  - Priority Lists will be created using (and only accepted via) the Priority List feature on the [FIRST Choice site](#).
  - Priority Lists are saved each time the user clicks "Update," letting teams add, subtract, and re-prioritize items until the deadline.
  - Upon the deadline, any existing Priority Lists are locked, processed, and no additional changes may be made (we strongly encourage you complete your list at least a day before the due date to avoid unexpected delays or surprises).
  - If you feel overwhelmed by the options, there are sample lists like "pneumatics" or "vision" available for quick selection. You can select a sample list for your priority list – or use it to get started and edit/customize as you see fit. Caution though, when you select one it will wipe an existing list and start fresh.
  - Any priority list submitted by a team that has not secured first-event registration payment with *FIRST* by noon (eastern time), Dec. 5, 2018 will be discarded before lists are ported in to the auto draft system (please anticipate at least one business day for registration payment to be processed and the updated status to be relayed to AndyMark).
- AndyMark randomly ranks lists.** After lists are locked, each list with at least one item is assigned a random rank (the order in which individual teams complete their Priority Lists before the deadline does not affect their rank).
- Items are assigned.** In rank order, AndyMark's auto draft system queries the team's highest priority item and, provided the team has the credits and *FIRST* Choice has the inventory, issue the item to the team. This applies to each Priority List line item as ranked. If the team doesn't have enough Credits to cover the entire amount (but at least one) or *FIRST* Choice inventory doesn't have the entire quantity (but at least one), the team will get as many as their credits/*FIRST* Choice inventory allow. If credits or inventory can't cover one, it will move on to the next ranked item so the team is not skipped for that round. Once the draft system gets to the last ranked Priority List, the draft system will query that last Priority List's next item and work its way back up the ranks (for Teams that know how we've done Alliance Selection in the past, this serpentine process probably seems familiar). This draft continues until inventory's gone or Priority Lists are exhausted. Inventory is then updated for the next phase of *FIRST* Choice. We will not publicly publish teams' Priority Lists, the assigned rankings, or final order contents.
- AndyMark ships your order!**

## Open Ordering

The open ordering phase of *FIRST* Choice is a traditional first-come, first-serve ordering process. Teams add items to their carts and check-out using credits remaining after the priority list phases.



Virtual

## Kit Detail

*Products available directly from the Supplier either via download or direct order...*

### Product Donation Vouchers

For a soft copy of the 2019 Virtual Kit Catalog that was included in the Kickoff Kit's black tote, click [here](#).

Vouchers added at Kickoff marked with an \*.

			Consider using for...						
Thank you...	for your voucher for...	which expires on...	Drive Train	Control System	Electrical Supplies	Pneumatics	Sensors	Shop Material/Tools	Other
<a href="#">AndyMark</a>	\$450	4/15/19	X	X	X	X	X	X	

<a href="#">Armatot</a>	One RS7 Encoder	4/27/19						X		
<a href="#">AutomationDirect</a>	\$35	4/30/19	X	X	X	X	X	X	X	
<a href="#">Bimba*</a>	2 free cylinders	4/28/19					X			
<a href="#">Clippard</a>	\$20	9/1/19					X			
<a href="#">Digi-Key Electronics*</a>	\$50	9/30/19		X	X			X	X	
<a href="#">Inventables</a>	\$100	5/4/19 6/3/19 (edited 11/28/18)								X
<a href="#">NextGen Robots LLC*</a>	1 CIM Cooler 180	5/31/19	X							
<a href="#">REV Robotics</a>	\$40	4/30/19	X	X	X			X	X	
<a href="#">RoboPromo*</a>	Bumper Material (rookies only)	4/1/19								X
<a href="#">RoboPromo*</a>	FIRST logo (for bumpers)	4/1/19								X
<a href="#">TE Connectivity</a>	\$25	6/1/19				X		X		
<a href="#">Vulcan*</a>	6 Springs	n/a								X

**Software**

			Consider using for...								
Thank you...	for your donation of...	which expires on...	Animation	CAD	CAM	Certification	Circuit Design	Programming	Simulation	Training	Data Analysis
<a href="#">Altium</a>	Altium Designer	12/31/19					X				
<a href="#">Autodesk</a>	Fusion360	n/a	X	X	X						





	SOLIDWORKS CAM Professional	n/a		X					
	SOLIDWORKS Visualize Professional	n/a	X						
	SOLIDWORKS Composer	n/a	X						
	SOLIDWORKS Electrical Professional	n/a		X		X			
	MySolidWorks Professional	n/a						X	
<a href="#">Tableau*</a>	Tableau Desktop & Prep	4/30/19							X
<a href="#">Wolfram Research*</a>	Wolfram Software Suite	6/3/19				X	X		

## Details

### Altium

**What:** Altium Designer, 1-5 student licenses to be shared per high school team. Altium Designer consists of all the tools required to produce a PCB from concept to manufacturing, electrical and mechanical.

**Expires:** 12/31/19

**Access Codes:** n/a

**Link:** [www.altium.com/frc](http://www.altium.com/frc)

**To access:** Fill out the form at [www.altium.com/frc](http://www.altium.com/frc)

### AndyMark

**What:** \$450 voucher for veteran teams that opted out of the Drive Base Kit (shipping not included)

**Expires:** 4/15/19

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** [www.andymark.com](http://www.andymark.com)

**To access:**

1. Shop at AndyMark.com.
2. Upon checkout, enter your team's access code.

**Fine print:**

Any order over \$450 will be the responsibility of the customer and will need to be paid to AndyMark through normal order purchasing methods.

## Armabot

**What:** One RS7 encoder (shipping not included)

**Expires:** 4/27/19

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** [www.armabot.com](http://www.armabot.com)

**To access:**

1. Go to [www.armabot.com](http://www.armabot.com)
2. Select 1 or more RS7 encoders (first unit free with this voucher)
3. Enter your valid code from the *FIRST* team registration system
4. Enter shipping and billing information
5. Place order and wait for arrival (3-5 days in continental USA)
6. Installation instructions at [www.armabot.com](http://www.armabot.com)
7. Technology tutorial for encoder implementation at [www.armabot.com](http://www.armabot.com)

**Fine print:**

Valid for purchase of one RS7 encoder individually or multiple product order that includes one RS7 encoder.

Limit one per *FIRST* Robotics Competition team.

Must be registered for the 2019 robotics season.

Voucher not transferable to other people or teams.

## Autodesk

**What:**

- Autodesk Fusion 360 – Explore design ideas quickly and easily with the integrated concept-to-production platform with 3D CAD/CAM. Connect your entire product development process in a single cloud-based platform that works on both Mac and PC. See the Fusion 360 course page for *FIRST* Robotics Competition [here](#).
- Autodesk Inventor – Professional grade solution for 3D mechanical design, simulation, visualization, and documentation.
- Synthesis: An Autodesk Technology – A simulator designed to help teams design, test, and experiment in a virtual game environment with the virtual game field.
- Autodesk Eagle – Bring your next spark of an idea to life with powerful PCB design software made for every engineer.
- Autodesk 3DS Max – 3D modeling and animation solution used by game developers, visual effects artists, and graphic designers to create massive worlds, stunning scenes, and engaging virtual reality (VR) experiences.

**Expires:** n/a

**Access Codes:** n/a

**Link:** [www.autodesk.com/first](http://www.autodesk.com/first) (a dedicated page for everything *FIRST* and Autodesk related including CAD datasets, tutorials, and access to Autodesk software)

**To access:** Click the link above to get started.

## AutomationDirect

**What:** \$35 (shipping not included)

**Expires:** 4/30/19

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** <https://library.AutomationDirect.com/free-first-voucher/>

**To access:** *(follow closely, the discount cannot be applied AFTER you place an order!)*

1. Login as Lead Mentor 1 or 2 at [www.firstinspires.org](http://www.firstinspires.org) to retrieve your team's voucher code.
2. Login to [www.AutomationDirect.com](http://www.AutomationDirect.com) with an existing account OR create a new one at [www.AutomationDirect.com/new-user](http://www.AutomationDirect.com/new-user).
3. Visit [www.AutomationDirect.com/Voucher](http://www.AutomationDirect.com/Voucher) and enter your team's code. This will enable a one-time \$35 credit for your account (any amount not utilized on the order will be forfeited).
4. Shop!

### Fine print:

Orders *must* be placed online. No 'call in' orders. Stock items ordered by 6:00pm EST will ship the same day.

Orders *must* ship to a US or Canadian address. Credit cards must be issued by a US or Canadian bank.

This voucher cannot be used towards shipping fees or Canadian brokerage fees.

A credit card (or PayPal) will be required to pay for shipping for orders under \$49.

Larger orders may qualify for free two-day shipping – see website for details: <http://www.AutomationDirect.com/static/specs/adpolicy.pdf>.

This voucher cannot be used to pay sales tax. A credit card (or PayPal) will be required to pay any applicable taxes. If your team/organization is tax exempt, you can submit appropriate documentation online during checkout.

## Bimba

**What:** 2 free pneumatic cylinders

**Expires:** 4/28/19

**Access Codes:** n/a

**Link:** <https://www.bimba.com/first>

**To access:** Visit <https://www.bimba.com/first> to select your cylinders.

## Clippard

**What:** \$20 in products ordered online (shipping not included)

**Expires:** 9/1/19

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** [www.clippard.com](http://www.clippard.com)

**To access:** Visit [www.clippard.com](http://www.clippard.com), select your products, and use the access code at check out.

**Fine print:** You must be logged in for the voucher to be validated.

## Digi-Key Electronics

**What:** \$50 in products ordered online (shipping included)

**Expires:** 9/30/19

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** [www.digikey.com](http://www.digikey.com)

**To access:** Visit [www.digikey.com/first](http://www.digikey.com/first) to redeem your team's voucher.

**Fine print:** The \$50 voucher will not display on the total of your order, but will be subtracted from your order during processing. Taxes not included. Good for one-time use, and any amount not used in that use is forfeited.

## Inventables

**What:** \$100

**Expires:** 6/3/19

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** [www.inventables.com](http://www.inventables.com)

**To access:**

1. Retrieve your team's voucher code from the *FIRST* system
2. Add the desired items from our store to your cart.
3. Use the voucher code ~~as a gift certificate code~~ *in the "Enter Promotion" field on the shopping cart page.* (edited 11/27/18)
4. Check out as normal.

## Mastercam

**What:** 1 license to Mastercam 2019 Educational Suite (includes your choice of Mastercam or Mastercam for SOLIDWORKS). Mastercam is a CAD/CAM software that can be used to both design products and program the processes to manufacture parts, specifically on CNC machines. Mastercam generates toolpaths that drive machine tools to turn designs in to physical parts.

**Expires:** 1 yr from start date

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** <https://www.mastercam.com/community/competitions/first-robotics/>

**To access:**

1. Go to <https://www.mastercam.com/community/competitions/first-robotics/> and register
2. Complete and submit the registration form. Once the form is received and processed, you will receive detailed instructions on how to download and install the software.

## National Instruments

**What:** NI LabVIEW software. This license also provides access to more than a dozen LabVIEW add-ons, NI Multisim for SPICE simulations, and NI Ultiboard for PCB design.

**Expires:** 1/15/20

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** [www.ni.com/first](http://www.ni.com/first)

**To access:**

1. **Access your team's serial number.** Have your Lead Mentor 1 or 2 log in to your team's account at [www.firstinspires.org](http://www.firstinspires.org) to access your serial number by clicking on "Passwords/Voucher Codes."
2. **Download software.** Get NI LabVIEW for *FIRST* Robotics Competition via the *FIRST* Robotics Competition Resource Hub at [www.ni.com/frc](http://www.ni.com/frc).
3. **Learn and Earn.** Learn LabVIEW with free online training and earn skills badges at [www.ni.com/frc](http://www.ni.com/frc).

## NextGen Robots LLC

**What:** 1 CIM Cooler 180 (shipping not included)

**Expires:** 5/31/19

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** [www.nextgenrobots.com](http://www.nextgenrobots.com)

**To use:**

- Be sure to email [sales@nextgenrobots.com](mailto:sales@nextgenrobots.com) with your Lead Mentor Name, *FIRST* Robotics Competition team number, and code found in the registration system so that we can make sure your code is active!
- Once confirmed, enter the team's assigned code from step 1 in to "Coupon code" on your order and the discount will appear during checkout. Do not "Checkout as guest."
- Before submitting the order, make sure the discount has been applied to the total. If the discount is not showing, try clicking "view cart" and reapply the code.

## PTC

**What:**

- Creo – 3D CAD software that can save your team time and budget by designing, assembling, and testing your robot before the physical build.
- Mathcad – Engineering calculation software that documents your team's critical engineering calculations.
- Windchill – Project management in the cloud. Securely manage and share all your files (documents, images, CAD files).
- Vuforia – Vuforia for computer vision and augmented reality. Determine the precise 3D location of objects and surroundings in your robot's field of view.
- Kit of Parts – PTC models all the parts from the official *FIRST* Robotics Competition Kit of Parts and playing field.

**Expires:** n/a

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** [www.ptc.com/go/first](http://www.ptc.com/go/first)

**To access:** Visit [www.ptc.com/go/first](http://www.ptc.com/go/first).

Questions? Email [first@ptc.com](mailto:first@ptc.com)

## REV Robotics

**What:** \$40 (shipping not included)

**Expires:** 4/30/19

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** <http://www.revrobotics.com/2019-frc-voucher>

**To access:**

1. Add any items from revrobotics.com to your cart.
2. At checkout, enter your voucher code in the coupon code box - the value of the voucher will be applied to your order.

## RoboPromo

**What:**

- *FIRST* logo set for bumpers (set of 8, white, 3.75 in. x 5 in.)
- Bumper Material, Red and Blue (rookies only)

**Expires:** 4/1/19

**Access Codes:**

- For logos: logo19
- For material: deepspace19

**Link:** [www.robopromo.com](http://www.robopromo.com)

**To access:** Go to [www.robopromo.com](http://www.robopromo.com) and enter the access code at checkout (include team number)

## Siemens

**What:** Solid Edge software & students can take Siemens' industry-recognized Solid Edge Certification online exam at no cost.

**Expires:** 12/31/19

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** <https://solidedge.siemens.com/en/resources/solid-edge-certification/>

**To take the exam:**

1. Follow the link above (or search for "Solid Edge Certification")
2. Once on the Siemens Certification website, choose which version of Solid Edge with which you are most familiar.
3. Register using a valid email address.
4. Select the "Associate Level 1 (appropriate for high school students)" exam.
5. Enter the access code (case sensitive) as the discount code.

**Fine print:**

Students have 3 hours to complete the exam. Good luck!

## SolidProfessor

**What:** One free membership per team

- CAD & CAM video-based courses, tutorials, and practice problems to get your team up to speed before competition.
- A library of software titles and topics, including SOLIDWORKS, Autodesk, Onshape, MATLAB, 3D printing, and more to round out your team's design knowledge.
- Search functionality to quickly find answers to all your design questions throughout build season.

**Expires:** n/a

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** [www.solidprofessor.com/frc](http://www.solidprofessor.com/frc)

**To access:** To register your team, please visit <https://www.solidprofessor.com/frc> and fill out the form.

## SOLIDWORKS

**What:** Free student sponsorship

- SOLIDWORKS Kit of Parts
- SOLIDWORKS 3D CAD
- SOLIDWORKS Electrical
- SOLIDWORKS Composer

**Expires:** n/a

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** [www.solidworks.com/FIRST](http://www.solidworks.com/FIRST)

**To access:** Interested student teams should complete the online application at: [www.solidworks.com/FIRST](http://www.solidworks.com/FIRST).

## Tableau

**What:** Tableau Desktop, one copy

Tableau Desktop can help your team play better defense, pick alliance partners, analyze robot performance, target your fundraising, and reduce inventory waste.

**Expires:** 4/30/19

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** [www.tableau.com/first-robotics](http://www.tableau.com/first-robotics)

**To access:**

1. Use the product code found in your Lead Mentor's 1 and 2 *FIRST* registration accounts for five activations per team.
2. Don't forget to check out Tableau's [free online resources](#) created specifically for *FIRST* Robotics Competition students.

**Fine print:** These access codes are for educational use only. Please do not share your key with anyone outside your team.

## TE Connectivity

**What:** \$25 redeemable via the TE.com sample program (shipping included). Example items [here](#).

**Expires:** 6/1/19

**Access Codes:** n/a

**Link:** [www.te.com/first](http://www.te.com/first)

**To access:** Instructions outlined [here](#).

## Vulcan

**What:** 6 springs from a select list (shipping w/in USA included)

**Expires:** n/a

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account

**Link:** [info.vulcanspring.com/first-robotics-competition](http://info.vulcanspring.com/first-robotics-competition)

**To access:** Submit the online request form.

## Wolfram

**What:** Free student sponsorship

- Wolfram One - a programming environment that provides access to the complete Wolfram technology stack
- Wolfram AlphaPro subscription
- Wolfram SystemModeler - a modeling and simulation software

**Expires:** 6/3/19

**Access Codes:** Available to Lead Mentor 1 and 2 in the team registration account and also emailed after completing the webform.

**Link:** [www.wolfram.com/firstrobotics/](http://www.wolfram.com/firstrobotics/)

**To access:** Fill out the form at the link above. You'll receive an email with your access code.