

Building the Robot



"FIRST® IS MORE THAN ROBOTS. THE ROBOTS ARE A VEHICLE FOR STUDENTS TO LEARN IMPORTANT LIFE SKILLS. KIDS OFTEN COME IN NOT KNOWING WHAT TO EXPECT - OF THE PROGRAM NOR OF THEMSELVES. THEY LEAVE, EVEN AFTER THE FIRST SEASON, WITH A VISION, WITH CONFIDENCE, AND WITH A SENSE THAT THEY CAN CREATE THEIR OWN FUTURE." - DEAN KAMEN

We engage our students by tasking them to build a robot in order to complete a challenge each season. To help get you started, we have created the [Robot Building Resources](#) Article that hosts the necessary resources to build your first FIRST® Tech Challenge robot. Those resources include:

- **Build Guides** - *one of our amazing Veteran Teams has created a comprehensive step-by-step guide in building a robot that will help you compete in this season's challenge. This is a great starting point for teams and should be viewed as a launching pad for your future designs as you become more and more familiar to the nuances to the game. Pay special attention to the [Legal and Illegal Parts List](#). This document is reviewed and updated every year, and it is your responsibility as a Team to ensure that your robot is built with legal parts.*
- **Design Resources** – *As one of our Program Sponsors, PTC, donates software and services for your team to use. If you have the capabilities or want to learn about a future state your team can strive for in accessing 3D printing, take a peek at our [Blog Series](#) that explore the 3D printing process.*
- **Programming Resources** - *These are quick links to the Programming software offered. (You can find additional resources and further training in the [Technology Information & Resources Article](#).)*
 - *The [software development kit \(SDK\) page](#) is a site called "GitHub". GitHub is a service that hosts our repository. This is for teams using Android Studio. Teams go to this page when they need to update their version of the SDK to incorporate the changes that the developers have made.*
 - *The [App Inventor download and resource](#) page includes training manuals and everything a team using App Inventor would need. It has the appliance files to set up and update the App inventor software. It also has the .apk files (apps) for the*

HELPFUL HINT: Although we provide Competition Kits in the Storefront, one of the unique aspects of FIRST Tech Challenge is how open the list of materials you are able to build your robots with is. We have seen robots built using 3D printers, locally sourced material from Home Depot, and all from the kits themselves. For that reason, it is even more important to review the Legal and Illegal Parts List to make sure what you are adding to your robot will not take away time later if you find out it is not allowed. Make sure to review **Section 5.3.2 Robot Mechanical Parts and Materials Rules** in [Game Manual I](#) for additional information.

driver station and the wifi channel change apps. There are a few .aia files which are examples for apps teams could make.

- **Sensor Resources** - *Robots interact with their environment using sensors. Although we only list two types of sensor resources here, there are a lot of different types of sensors that serve different purposes that can be added to your robot.*
- **Technology Resources** - *We have created an entire Article devoted to the JAVA Technology. From training to troubleshooting, this is a great resource for Teams.*
- **Wiring Resources** – *Resources to properly wire your robot.*

Although it is incredibly helpful to have a Coach/Mentor who is technologically savvy to help with the design, build, and overall guidance, it is not always possible to have one ready on hand. For that reason, make sure to pose your questions (or find out answers to questions you didn't know you had) on the [FIRST Tech Challenge Forums](#) (Specifically the [FIRST Tech Challenge Technology Forum](#)). The [Mentor Manual](#) also has a section on how to look for a Technology Coach/Mentor. However, your team's greatest strength is the community around you. Many [Affiliate Partners](#) hold workshops for Rookie Coaches/Mentors that cover these topics. Teams local to you (and in some cases, not local - our Alaska Teams are great examples of how networking across great distances is very doable) are a great source of knowledge that you should try tapping. Check out this [video](#) for some examples of our *FIRST* Tech Challenge networking groups.



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