



The Compass Alliance Pathways: Rookie Resources

Welcome to the Rookie Resource Repository! This 3 part guide is designed to help rookie teams through their first season, with resources to guide you from build season, through your first competition, to the end of the season.

Part 1 - Before Build Season

Part 2 - Build Season

Part 3 - Competition Season

Part 1 - Before Build Season

This guide focuses on the preparation that your team should go through before the build season.

1. Preparing the Team and Planning

- Ways to organise your team - these are just some examples of how others do this. Remember, each team is different and what works well for another team may not necessarily apply to your team.
 - [FIRST Robotics Competition team 1073 Handbook](#)
 - [FIRST Robotics Competition team 27 Toolkit](#)
 - [FIRST Robotics Competition team 971 Team Organisation](#)
 - [FIRST team Handbook](#)
- Team Communications
 - It is important to set-up a platform of communication so that everyone is aware of what is happening, and when the meetings are. Slack and email groups are two highly recommended methods of communication.
- [Example Contract for all students on the team](#)

2. Kit of parts

- *“goods FIRST obtains from companies on behalf of, and provide to, FIRST Robotics Competition Teams.”*
 1. *The Kickoff Kit - these are items packed in totes, and distributed at your kickoff event. One set of items that go to all teams, and another tote for rookie teams.*
 2. *The Virtual Kit - items donated by sponsors*
 3. *FIRST Choice - an online menu of items available to FIRST Robotics Competition Teams, hosted by AndyMark. Teams use a limited number of credits to pick and choose the items they prefer.*
- [Selecting parts](#) - Presentation by Michael Corsetto from Team 1678, The Citrus Circuits on how to select your *FIRST* Choice parts.
- [2018 Kit of Parts Update](#)
- [FIRST Choice Items](#)





- [FIRST Choice Details](#)

3. Money

- To learn how you can tackle raising funds to run and sustain your team, check out The Compass Alliance [Fundraising Pathway](#)
 - [Toolkit](#)
- Sponsors / grants
 - [FIRST Robotics Competition grants](#)

4. Mentors

Each team needs at least one adult Mentor with technical expertise willing and motivated to “coach” the team through the build and competition season (and beyond). It is also highly recommended, that there are two or more adult mentors to help with administration, fundraising, community outreach, and other tasks.

- [Mentoring Guide](#)

5. Registration and paying

- [Youth Registration Guide](#) - *Note: FIRST requires all youth team members to register. Youth Team Members who have not registered will not be permitted to compete in FIRST events or competitions.*

Planning for events:

- Meet as a group and decide which competitions that you will attend. Factors like cost to stay overnight or distance to travel must be considered heavily.
- Get School District approval to go. There are probably specific forms and procedures based on your district.
- Register your Team through *FIRST*
- Get all forms filled out and turned in.
- Determine who is eligible to travel. (Some teams will look at student grades, others look at outreach participation, meeting attendance, level of participation, etc)
- It is important to carefully review all of the official documents found on both the *FIRST* website, www.usfirst.org and your regional *FIRST* website

For trips and events, someone has to be in charge and make the trip/event happen and take care of all of the details before the team commits to going. You should have a written plan for each event/trip. Here are some things to cover:

- Who is going?
- When do you want to be there?
- Where are you meeting at the event?
- What gear do you want to take? (For more information on packing, go to section 3)
- When is the gear going to be packed, and do you need a key and/or supervision on campus?





- How is the gear going to be transported?
- Do you need to bring food or is there food available there?
- What time will you return?
- When will the gear be returned to the lab?
- How is everyone getting there?
- Is there adequate supervision?
- If lodging and/or air travel are needed, then who is going to take care of this?
What is the lodging/travel plan?

The *FIRST* [Season Calendar](#) provides you with all the important dates for the upcoming season. Remember to always keep an eye on the time and make sure that all submissions are completed on time.

6. Safety

- [FIRST Robotics Competition Team Safety Manual](#)
- As of May 1st 2014, *FIRST* Robotics has implemented a new protection policy to raise awareness and prevent unsafe working conditions for *FIRST* Robotics Competition teams. For more information on the policy, please read the [Youth Protection Program](#)
 - Note: these resources are useful for all teams, but only those in the US and Canada are required to complete YPP certification.
- [FIRST Robotics Competition team 27 Toolkit - Chapter 8 Competitions](#)
 - In particular, pages 5-7 include sample consent forms.
- [Team 1816 Safety Resources](#)

7. Buying parts

For teams outside the USA, consider finding local suppliers. Get in touch with teams in your area to see where they get parts!

- [Recommended Tools and Materials FIRST Robotics Competition Team 1538](#)
- [AndyMark](#)
- [VEX](#)
- [West Coast Products](#)
- [McMaster-Carr](#)
- [Harbor Freight](#)
- [Amazon](#)
- [Newegg](#)

8. Places to Find Help

- [Find Local support](#)
- [FIRST Help Hubs](#)
- [Chief Delphi](#)





Rookie Resources Part 2 - Build Season

This guide focuses providing you with the resources you need to have a successful first build season.

For rookie teams, we recommend starting by building the chassis that comes in your kit of parts. It comes with a set of instructions, or you can get started by viewing [this video series](#). Once that is complete, work on completing one game task, getting very good at it before moving onto the next task. To pick the correct task, perform a game analysis as shown in step 2 below.

1. Kickoff

Go to a local kickoff if you have one! If not, be sure to watch the stream so you can find out the game as soon as possible!

2. How to analyse the game

Once kickoff is complete, it is critical to determine what components of the game you want to complete. Using a basic table as shown below, it is easy to complete a points analysis. Here, we consider being a rookie team for the *FIRST* STEAMworks season. We analyse how many points each task is worth, how difficult it is to complete, and how many points that task could give over the course of a match.

Task/Strategy	Points per Cycle	Cycles can Complete	Difficulty (1-10)	Points available
Gear	Variable	3	1	80
Gear + 1 in auto	Variable	4	3	105
Hang	50	1	3	50
Fuel (low) (hold 50 balls)	~5	3	6	15
Fuel (high) (hold 50 balls)	~16	3	9	50

Based on this table, it is easy to see that a natural progression of tasks is:

- 1) **Get robot moving**
- 2) **Be able to retrieve gears from the human player and deliver them to the airship**
- 3) **Be able to hang**





4) Be able to deliver a gear in auto

There were many teams that used this strategy successfully and were ranking high enough to be alliance captains!

3. How to set out a build season

During the season, it is important to keep track of time, and plan out the season carefully in order to produce a successful robot within 6 weeks. Here is a [Sample Build Season Schedule](#) to help your team get started.

- Important days:
 - Kickoff/ Game Analysis - First 1 -2 days
 - Prototyping
 - Finish drivetrain
 - Finish mechanisms
 - Field assemblies finished
 - Finish robot assembly
 - Drive Practise / Testing (This needs to happen in at least the last week or two)

4. Season resources

The official *FIRST* season resources can be found [here](#). This is where you will find the game manual, field details, the only official [Q&A](#), as well as Team Updates for rules that you should watch out for.

- The drivetrain is the most important sub-system - without mobility it is nearly impossible to score or prevent points. We recommend that rookie teams start off with the given Kit of Parts as it is simple, and works well each year. For teams who know that they have the resources, time, and expertise, this guide "[How to choose a drivetrain](#)" from *FIRST* Robotics Competition team 1114 outlines the steps to picking the right drivetrain for your team and the game. Here is also a guide to the [components of the drivetrain](#) by 1257
- [Mechanical Tips](#) to help you start off on the right foot
- The [Team 3847 Design Concepts](#) are a great read for learning the principles of design and common designs in the *FIRST* Robotics Competition
- The [Electrical bible](#) by Team 2853 provides a basic understanding of all the electronic components the *FIRST* Robotics Competition robot uses.
- [FRC Control System Troubleshooting](#)
- [Complete Guide to FRC](#)
- [Award Submissions Reminders](#)
- In addition to the above resources, [The Compass Alliance Pathways](#) are designed to guide your team through each part of a *FIRST* team. Much like this one, these paths combine resources and lessons from years of experience to guide your team.

5. When online resources aren't enough, and you need to talk to someone:





- [FIRST Help Now - 24/7 call center](#)
- [FIRST Tag Teams - Find a virtual mentor](#)

6. Bag and Tag

- [Stop Build Time](#)
- [How To Bag and Tag Your Robot - FIRST Robotics Competition Team 1538](#)

Rookie Resources Part 3 - Competition Season

This guide focuses on getting you ready for your competition season, as well as what you should be doing there.

Before the event

1. What to bring

- What You Will Need at a Competition by *FIRST Robotics Competition Team 1538*- Example [Checklist](#) for competition

2. Preparing the team

- Before the event, it is important that everyone is on the same page about what will happen at the competition to help the event run smoothly for your team.
 - The expectations for both students and mentors should be discussed, for example:
 - No phones
 - Act with Gracious Professionalism towards everyone
 - Interact with other teams!
 - Positions should be assigned to each person beforehand and schedules prepared. An example would be:
 - Drive team - 1 Drive coach, 2 drivers and 1 human player + any year specific roles
 - Pit crew - 2-3 students to check the robot in and check it out for competition (These students should be able to cover all areas (Mechanical, Electrical, Software) and fix robot should anything happen)
 - Scouting team - 7-8 team members
 - Judges crew - 2-3 students standing outside the pits to answer questions
 - Chairman's team - up to 3 students if presenting at that event
 - Media team - 2 students - 1 on video of all matches, 1 on other photos
 - Spirit team - 1-2 Leading cheers or wearing the mascot





- A good example to start with can be found in Chapter 12 of Team 27's [FIRST Robotics Competition Toolkit](#)

3. Judging

- At the event, judges will walk around the pit area to speak with teams. This is the way that awards will be judged.
 - Make sure you make it personal - talk about your experience on the team. It will resonate with them much more than just facts
 - Don't be afraid to talk about failures or struggles - showing that you encountered a problem and figured out a way past it can be very memorable with judges.
 - Don't lie
 - Have visuals to help the judges understand
 - Some FAQs on talking to judges can be found [here](#)
 - [Judging](#)
 - Further tips for judging and specific awards can be found in The Compass Alliance Awards Pathway [here](#)
- [Robot Transportation](#)

At the competition

4. What to expect

- [What to expect](#)

5. Registration

- Go to Pit Admin for registration
- You will need to bring:
 - Team Roster
 - Consent forms for students/mentor not registered online
 - There may be local consent forms as well, your competition organiser will send them out ahead of time if required.
- You will receive:
 - Drive team buttons (badges)
 - Do not lose these as there are no replacements. They are required to get onto the field.
 - Overall competition schedule
 - (Optional) Practice schedule
 - Any other documentation the competition requires.
- Important to note:
 - Pit admin are the gatekeepers to a lot of information, please keep in mind they are volunteers. If you are friendly, say please and thank you, they will probably be more willing to help you throughout the competition.





6. Pits

- The robot pit area is your home away from home for every competition. This space is anywhere from 8ftx8ft to 10ftx10ft, and where you'll display your robot, make repairs, speak with judges and plan your strategy between matches.
 - You should have:
 - Battery spill kit
 - It will often have:
 - Shelving
 - Screens/Displays
 - Extra Lighting / Power
 - Tools (*Note : A full miniature machine shop is not required. There will always be basic machining services should you require an extensive repair at your event.*) [Sample tool packing list](#)
 - Raw Material
 - Spare Parts
 - Cleaning Materials
 - Often the pit is carpeted, so having a vacuum is very helpful.
 - Game Piece
 - First Aid Kit

7. Inspection

- Before your team can plan in additional practice or any qualification matches, you must pass inspection. Inspection ensures your robot adheres to the rules. There can often be a line, so try to get there as soon as possible. Be sure to complete a "self inspection" using the inspection checklist (available on the [FIRST website](#)) during the last week of build season so you can correct any issues before competition.

8. Matches

- A guide to [Match Strategies](#) by Team 1114 Simbotics
- Scouting
 - [The Blue Alliance](#) is the place to find match info and watch matches from previous events.
 - [All the scouting resources you could ever want!](#)
 - [Scouting 101](#)
 - This resource also includes example pit and match scouting sheets.
 - [Team 1114 Simbot Seminar Series - Scouting and Match Strategy](#)
 - [How to make your picklists](#)





9. After the competition

- Competition Debrief
 - Keep it focused by asking directed questions such as:
 - What did we do well at this event?
 - What didn't go as planned?
 - How can we improve for the next event?

After Competition Season

1. Season debrief

- After build and competition seasons, it is good to do a team debrief. Try to keep it focused by asking questions such as:
 - What went well this season? What successes can we celebrate?
 - What didn't go as planned?
 - What can we do better next season?

2. What now?

Start at the beginning again, but this time with the experience you gathered over the season!





Appendix A - Revision History

Revision #	Revision Date	Revision Notes
1.0	Jan. 2018	Initial Release
2.0	Sept 2018	Updated formatting Added revision history

