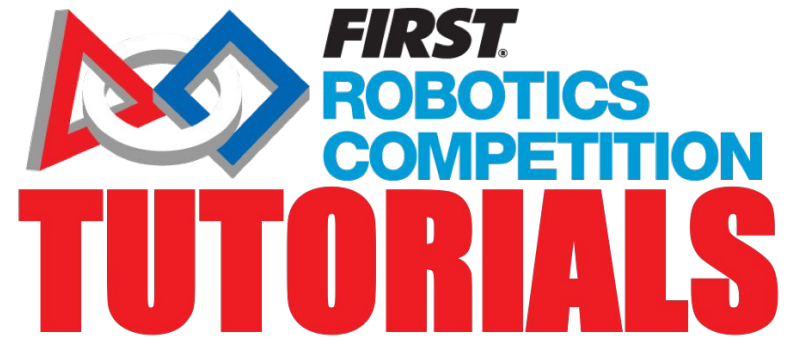


Making the Most of the Preseason

TEAM 4150



What is the preseason?

- **The time between your last formal competition and kickoff the following year**
 - ◆ ~April through December
 - ◆ To be a fully effective team this time should be used to **build skills, promote teamwork and ensure resources** are in place to support a successful build season.
 - ◆ Building a team while also building a robot is like changing your tires while driving down the highway...

Importance of the offseason

- Making connections with the community through outreach and sponsorships
- Looking at the accomplishments of Chairman's award winners shows that they are active year round
- Not surprisingly, these teams also tend to do well at regional competitions



Outreach

- Build a relationship with your community and school with outreach events
 - ◆ Relay for Life
 - ◆ Middle & elementary schools
 - ◆ High school club fair
 - ◆ Remake Learning Days
 - ◆ School board & State School Board Association
 - ◆ Rotary Club & Lions Club
 - ◆ Girl Scouts / Boy Scouts



FRC 4150 students speaking to administrators at the 2019 Pennsylvania School Board Association Conference.

Fundraising



FRC 4150 robot sponsor panel

- ESSENTIAL to a successful team
- Fundraising needs to happen early & often
- Fundraising Ideas:
 - ◆ Reach out to local companies
 - ◆ School District
 - ◆ Community events
 - ◆ Traditional fundraisers
- Remember to honor your sponsors by displaying their names/logos on your website, robot, or clothing!

Teamb

→ New members

- ◆ School club day & demonstrations to 8th graders
- ◆ Developing good team chemistry
- ◆ Create opportunities for new members to integrate into the team



FRC 4150 demonstrates their robot for new potential FRC students

Teambuilding Model

- **Forming, Storming, Norming, Performing** –
Go through the steps and try not to get stuck, especially in the storming phase
 - ◆ Use both robot related team activities and other fun activities (laser tag, movie night, etc.)



FRC 4150 students at a laser tag teambuilding event

Teambuilding Model



Forming	The team act as individuals and there is a lack of clarity about the team's purpose and individual roles.
Storming	Conflict arises as people begin to establish their place in the team.
Norming	There is a level of consensus and agreement within the team. There is clarity about individual roles. The role of the leader is important in managing this.
Performing	The group has a clear strategy and shared vision. It can operate autonomously and resolve issues positively.

Adapted from Tuckman 1965

Administrative Teambuilding

- Selecting team leadership (mentors)
- Define team goals
 - ◆ Competition scheduling
 - ◆ Awards to pursue
- Develop / revise student handbook
- Meet with Parents
 - ◆ Hopefully identify some new mentors
 - ◆ Define expectations for communication
 - ◆ Define student expectations
- FIRST Choice selections and other administrative items



FRC 4150 officers present to the School Board at the start of each school year

Safety Training

- Prepare students for using tools in the workshop
- Get them ready to be productive before the season starts so time is not wasted on introductory training during the build season
- Train on all common tools, safety equipment, and measuring tools
- Tailor training to the tools available and commonly used in your workshop



FRC 4150 students learning to use the drill press

Safety Training Examples

→ Band saw

- ◆ Set guard height to just above work piece but with room to see cut line
- ◆ Use fence or protractor when possible
- ◆ Keep fingers away from blade
- ◆ The end of the cut is most dangerous.
- ◆ Make relief cuts first to facilitate final cut.
- ◆ Smooth pressure on the piece, let the blade do the work
- ◆ Use blade lubricant before you start

→ Drill press

- ◆ Foot control can be accidentally activated, watch where you place it
- ◆ Clamp work pieces whenever possible
- ◆ If not possible to clamp be sure to control the workpiece.
- ◆ Use center drill when you want precision
- ◆ Make sure bit is tight in the chuck
- ◆ For thick metal pieces use lubricant
- ◆ Let the bit do the work with steady pressure. If not cutting smoothly sharpen the bit.

Safety Training Examples (cont'd)

→ Hack saw / file

- ◆ Clamp piece in the vice
- ◆ Cut on the push stroke, release pressure on the pull stroke.
- ◆ Keep the blade straight, don't let it bind
- ◆ This is a skill, it takes some practice
- ◆ Be careful for "line of fire" - if you slip you don't want to catch your arm on any sharp edges.

→ Measuring tools

- ◆ Machinist square - how to disassemble and reassemble
- ◆ Measuring tape - note slider on the end.
- ◆ Calipers - different types
- ◆ Micrometer - major marks are 0.1" - minor marks are 0.025" - marks on the barrel are 0.001"
- ◆ We also discuss different types of drill bits (number drill, letter drills and fractional drill) at this time

Safety Training Examples (cont'd)

→ Sander

- ◆ watch your knuckles
- ◆ on sanding disk, pay attention to direction of rotation, always sand on the downward rotation side
- ◆ use light pressure, let the sander do the work.

→ General Safety

- ◆ Safety Glasses always
- ◆ Gloves only when appropriate, not on rotating equipment
- ◆ No horsing around
- ◆ Know what's going on around you
- ◆ Do not use tools you have not been trained on
- ◆ Line of fire (what happens if you slip or something breaks)
- ◆ Control your work pieces
- ◆ DO NOT LEAVE THE CHUCK KEY IN THE DRILL PRESS
- ◆ Use equipment only as intended, hold work firmly against the fence
- ◆ Be careful of chemical hazards, some of the things we use can be harmful to you.

Just in Time Safety Training



FRC 4150 students learning to use the chop saw
using JIT training

- Just in time (JIT) refresher training during the season
- Use JIT training for less commonly used tools as needed during the build season

Mock Kickoff

- Great way for new members to gain an understanding of the design process
- Also good for team leaders and mentors to practice and prepare for kickoff



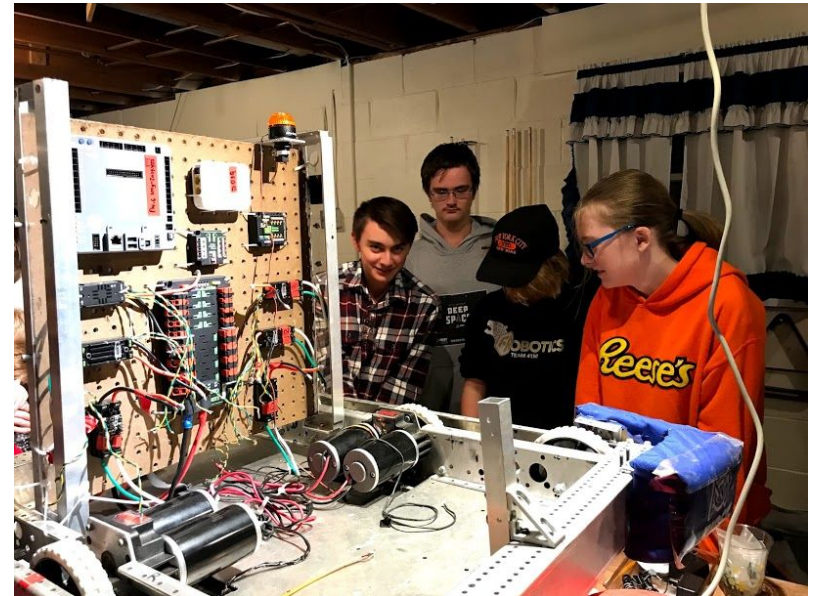
FRC 4150 students and mentors building a mock season robot to play Breakaway

Mock Kickoff Procedure

1. Select previous game that is unfamiliar to the team
2. Watch the game reveal
3. Review the game manual in detail to identify key elements
4. Brainstorm game strategy
5. Brainstorm robot design
6. If sufficient time proceed to mockup activities and maybe build a demo bot

Technical Training

- Wiring
- Pneumatics
- Motors and actuators
- Control system theory
- Software:
 - ◆ Language
 - ◆ Design
 - ◆ Configuration control



FRC 4150 wiring training

Off Season Competitions



FRC 4150 drive team at the
2019 Steel City Showdown

- Offseason competitions are a great way to:
 - ◆ Promote team building
 - ◆ Build drive team skills and develop new drive team members
 - ◆ Work on the skills required to maintain and improve your robot
 - ◆ Build relationships with other teams in your area
- These events are also typically inexpensive to attend, especially if close enough to attend as single day events

Credits

- This lesson was written by FRC 4150 in partnership with FRC 8027 for FRCTutorials.com
- You can contact the author at froboticsteam4150@gmail.com.



- More lessons for FIRST Robotics Competition are available at www.FRCtutorials.com



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