

Tips for Rookie Teams

The Bionic Tigers - FTC 10464



Engineering Notebook

- Put time into it!
 - It takes a lot of time and thinking to develop a good notebook
- Collaborate → Have everyone on the team contribute
 - Use platforms like OneNote, Google drive, etc to store documents
- Look at examples of how other teams do things
 - Hot Wired Robotics FTC Team #7013 (<https://youtu.be/jfefMCHO-LA>)
- Create your own format
 - Make it work for your team
 - Keep the format throughout the notebook
 - same font, size, style, etc

Programming

- Give yourself enough time
- TeleOp
 - Program controls to assist your drivers
 - Communicate with drivers about controls
- Autonomous
 - Figure out motor encoders
 - <https://ftc-tricks.com/dc-motors/>
 - gives a nice overview of how to program motors
 - Use sensors
 - good for awards and robot
- GitHub
 - If you are going to use GitHub, our advice is to create a repository of the TeamCode folder.
- If you don't know how to do something, look it up! There are great forums for FTC

Robot Design

- Standardize hardware
 - minimize tool needed to fix problems
- Use the off-season to plan ahead
 - Use off-season projects to learn new skills and test
- Design first
 - Cardboard prototyping
 - Use CAD to your advantage
 - Design reviews
 - Allow others to contribute to the idea and prototype
- Research to discover designs and speed up the process

Robot Design

- Parallel prototyping
 - Have multiple ideas going at the same time
 - Use data and scores to compare prototypes
- Plan out where you will put the electronics in CAD
- Plan wiring in CAD
 - Extremely important to avoid troubles and disconnects
- Spend time together as a team
 - learn how each other work and form ideas together
- Create priorities so that you are able to actually build a functional robot
 - If you focus on too much, you'll end up with a robot that was supposed to do a lot, but doesn't work

Robot Building

- Care about quality when building
 - It matters!
- Use standardized hardware
- Have easy access to nuts and bolts
 - As you're putting it together make sure you can easily take it apart
- Use the right tool for the job
- Understand that building your robot will take longer than you expected
- Clean up after yourself so that it is easier to find things next meeting!
- Have a clean workspace and area to work and store multiple ideas

Engineering Systems

- Figure out what needs fixed before it does
 - Fail fast, analyze what is going wrong and change quickly
- Set up systems so you are prepared
 - Have plan B,C, D ready in case A fails
- Don't forget to rewire things after fixing them
 - Plan wiring ahead and minimize connects
 - The more connections, the more places to disconnect
- Full batteries are more important than you know
 - Change batteries frequently, systems run differently based on battery power (especially motors)
- Work as a team to keep the systems going
- Know your bot!

Use the Off-season!

- The off-season is a great time to build the team and figure things out
 - Team bonding, outreach, practices
- Three main ways to use the off-season:
 - team planning
 - community outreach
 - and side project building.
- Off-season planning
 - Analyze what didn't work last season and design ways to overcome the problems
 - Create structure and strategy in advance
- Community Outreach
 - Find local events to share about FIRST and demonstrate your robots at
 - Help others who are considering starting a team
- Side Projects
 - Find something fun to do
 - These are great for helping discover what needs pre-season planning

Things You Should Do/Know

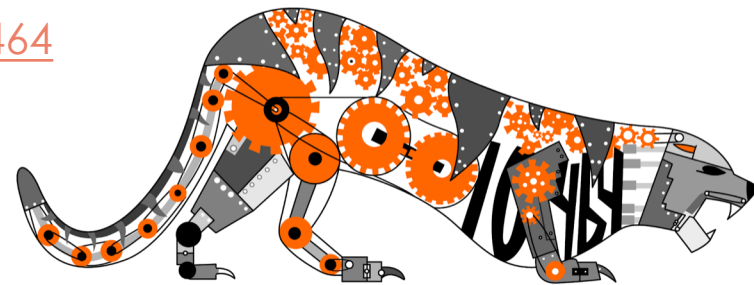
1. Have goals for the season
 - as a team and as an individual
2. Set up a timeline of when different stages should be completed
 - plan ahead and leave more time than you think
3. Communicate with your team, other teams, and mentors
4. Make sure everyone on the team has a basic knowledge of everything
 - This is good for judging and in general
5. Care about doing high quality work
 - You put in a lot of work, so make sure it is worth it

Things You Should Do/Know

6. Test everything thoroughly
 - know what your wear/tear parts are
 - servos, screws, etc
7. Prepare for the judging presentation
 - practice questions and presentation
8. Keep making progress in the off season
 - continue to grow constantly
 - look into off season competitions
9. Find how you work as a team
 - every team is different
10. Have fun!
11. Attend scrimmages in your area
 - Great way to learn and meet other teams!

Credits

- This lesson was written by The Bionic Tigers 10464 for FTCTutorials.com
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