

Rookie Conference Call #6

Week 3 – Jan 22-28: Development and Assembly

Programming

Q: Default code? Where is it?

- A: FIRST -> kit of parts -> “how to load and use code”
<http://www.usfirst.org/roboticsprograms/frc/2012-kit-of-parts-control-system>
- Have to load it yourself, we recommend that you do it through a wired network (not wireless) to avoid problems with transfer
- NI Training Materials - <https://decibel.ni.com/content/community/first/frc>
- Follow the tutorial to get you default code on the robot:
 - How to Build and Load Programming in LabVIEW, C/C++, and Java
- Need the most recent version of the firmware for the C-Rio or you will not be able to compete Working on code
- Update to get the C-rio utilities - <http://joule.ni.com/nidu/cds/view/p/id/2262>
- Look at Connectivity diagrams on Kit of Parts website for help in “talking” to the robot (this guide is posted on the rookie website www.frcrookie.com - getting started)
 - Tells how to wire, etc
 - C-Rio, etc
- If you are still having questions feel free to contact Clinton or a veteran team!

Q: Can I load LabView on something other than the Classmate?

A: Yes – you can load LabView on Classmate, but you can also load it on any computer and develop code on another computer besides your classmate (frees up classmate resource)

- You can load it on multiple computers for development and tutorials
- Must be a PC laptop or computer

Q: Will I eventually HAVE to load LabView on the Classmate - in order to run our program?

A: No, the Classmate can read/process your programs without the full version of the LabView on it. But you will need the FRC Dashboard and FRC Driver Station application on the Classmate.

Q: My classmate does not hold a charge really well

A: Shutting off the wireless will help; put the brightness down on your screen will help save the battery life. At competitions, you might want to shut down the computer and turn it on right before the match. This will help the computer to be in a “fresh” state.

Q: Still cannot download the default code ... what do I do?

A: Contact Clinton or another veteran team to get some help. Follow the tutorials to a “tee” to ensure that you’re not missing any steps, sometimes a little missed step can cause BIG problems!

Q: Labview – says it is a 30 day trial? What do we do in 30 days?

A: As long as you put in the code, you are good. The National Instruments serial number is S14X86759

Electrical Tips

- Make sure that your connections are wired very tightly and secure. Crimp connections, and tug on the wire quite hard to ensure that it won't come undone. It's better for it to fail during testing than in a match
- Use silicone around the PWM wires and Ethernet connections to avoid the connections wiggling loose
- Sometimes you might sacrifice aesthetics to ensure that the connections will not come undone
- Make sure your router is tightly secured to your robot
- Be careful of the barrel plug on the wireless bridge. It's not made to be durable, so secure it with a zip tie or similar method
- It is absolutely CRITICAL that you make sure that your battery is secured during matches. You can use the battery case that comes in the KoP, but you also want to use heavy duty zip-ties velcro, or a physical battery containment device to make sure it stays put. You will be E-Stopped if your battery comes out of your robot, and will not be capable of competing during the match.
- Label wires so you know what wire goes to where. Label both ends of the wire (at the component and at the Power Distribution board) to make tracing wires easier.
- Labeling helps with making sure everyone knows what wire is for what – aids in communication
- You will have LOTS of wires by the time you're done and it can be difficult to troubleshoot if you don't know what wire goes to what
- Can also use a spreadsheet to keep track of what wire goes where

Safety is imperative!

- Have a "safe person" to hit the **space bar** or **enter button**
- **Space bar** "e-stops" the robot - so you will need to re-boot the entire system up
- The **Enter key** is a "disable" key - which stops the robot, but does not need a system set up

Begin assembly - chassis should be moving by end of this week!

- When the robot moves – it's a big morale booster – helps get team excited and motivated to continue working! A robot moving signals that the robot is that much closer to competing! So aim for moving this week!
- If you don't have a chassis built by now, ask for help!
- Start working on assembly of other components ie ball intake, shooter, etc
- Finalize design by the end of the week

Vision

Q: Is there a ruling on how bright your light source can be on the robot for the camera to see?

A: This is a question that might need to be proposed for the Q/A. It appears that the white are blinding to the drivers. A suggestion may be an infrared light. Are the cameras rated for the ir range? We are not sure. Get a tv remote and shoot it at the recto-reflective tape to see if it works. Discussion on CD about IR usage with the Camera:

<http://www.chiefdelphi.com/forums/showthread.php?t=100759>

Hooking up the light to the camera - it doesn't need to be too far away. Lots of testing that can be done. Use the camera for setting up the robot for auton.

Q: Any rules on how quickly the ball can be projected?

A: No limit on the balls this year.

Business update

Safety Glasses are REQUIRED!

- Goggles (such as ski goggles or chemistry goggles) are NOT safety glasses
- Safety glasses must have side shields and be impact-rated
- Label each pair with your Team Number and Students' names. This way, if they get misplaced, they'll be returned to you.
- If you have to share glasses, make sure that you clean them between each user to avoid sharing germs or eye bacteria
- Local hardware stores may donate some to your team
- Your sponsor (especially manufacturing places!) may donate cases of them to you!
- FIRST's rules state that they may be shaded or reflective, so long as you can see the "white" of your eyes through the lens from any distance

Scouting – start thinking about it!

- When you get to competition, you will want to know *what your partners can do* and *your opponents*. To find out what they do, you need to "**Scout**".
- It is important to think about scouting NOW because it may impact YOUR game strategy as you are building your robot
- **At competitions:**
 - Scouting helps you know who to pick/partner with in eliminations
 - Data is important -
 - Watch the matches and collect the data
 - How many balls did they score ... low, medium, high?
 - How many penalties did they have (you don't want someone who has a lot of penalties that could possibly cause you from losing an elimination match)?
 - Can they activate the ramp?
 - Create scouting sheets to collect the data – then organize the data (database, spreadsheets, binders, etc)
 - Students can fill out the data in the stands – using worksheets or laptops
 - One idea is to have picture of field on sheets – then have them mark where the balls are scored, etc. and it's all graphical
 - Don't be afraid to ask veteran teams to help with data
 - Could even partner and scout together
 - Might be able to utilize data from other teams for scouting
 - Be prepared for if you are top 12 – you may be choosing teams for the eliminations!
- **Elimination rounds:** It is possible that you will be in the top 8 so be prepared!
- Be ready for teams soliciting you if you are in the top 8
- Many rookies have picked for the eliminations – some have even won so be ready for that possibility!
- Be sure it is your decision as to who you pick and not other people or teams

If students are looking for something to do, have them start developing scouting plan/sheets NOW

Begin researching awards

- **Rookie specific:**
- **Rookie All-Star,**
- **Rookie Engineering Inspiration,**
- **Highest Rookie Seed**
- Go to www.usfirst.org to find awards

Look at Awards section of manual (section 6)

- Be prepared tell your story
- Document what you have done with community outreach
- How are you impacting your school/community?
- Struggles you've overcome?
- Think about what is important to tell the judges about your team
- What can you do to "sell" your story to the judges?
 - Handouts?
 - Boards with pictures?
- What is expected to turn in?
 - *Print off copies of your "story" to give to judges when they come to pit at competition (5-10 copies per competition)*
 - *Possibly tap into your graphic arts department, photography department, English department to assist in submissions*
- What can a rookie team win - in Michigan: if you win it at a district, then at the State Championship, if you win, you are invited to the World championships. Michigan sends 3 Rookie All Stars to the World Championships.
- There are also many other competitive awards including: Spirit, Website, Quality, Gracious Professionalism, Controls, among many others
- Look at the awards section of the manual for more information!

Online Awards – deadlines are February 16, 2012 – Noon!

- Consider urging students to submit **Woodie Flowers award** nominee!
 - Must be written by a student
 - BIGGEST honor a mentor can receive
 - Great opportunity for your students to recognize a mentor whose made a huge impact
- **Autodesk Inventor Award**
- **Website Award**
- Nominate students for the **Dean's list**
 - The adults write these essays
 - Recognizes 2 students' contributions to team
 - Juniors/Seniors
 - Students get a letter that can be used for college applications

Competition

Travel arrangements

- If you haven't gotten permission from the school district, YOU NEED TO!
- What are rules about: Carpooling? Staying at hotels? Find out NOW!

Meal arrangements

- Kids will have to eat at competition - ask parents to assist

- Competitions have meals available for purchase – most competitions will send an email asking if you want to do a team meal purchase but check FIRST in MI for more info
- Some arenas won't let you bring food in so be prepared for that (ie Eastern Mich won't let you for States)
- Ask local businesses for donations

Uniforms - keep it simple – but make it a priority ... you are getting close to the deadline!

- If JCP team, contact them asap so they can get your t-shirts going
- If you are having students pay for uniforms, get a quote from your t-shirt place BEFORE you collect money. This will give you a budget.
- **Decide what your uniform will consist of**
 - It is recommended giving each student three shirts - one for each day of competition (Thursday, Friday and Saturday) – HOWEVER if your budget does not allow, it is not a requirement
 - Decide if will you have t-shirts only, or will you offer hoodies or jackets?
 - Will you require all of your students to wear specific pants that will need to be ordered?
- **Decide quantities**
 - Get student sizes and mentor sizes – you only NEED to uniform your team; if parents and families want uniforms, have them purchase their own
 - Whatever you do, if you are collecting money for uniforms, collect the money in advance! Trying to get the money after they have the goods is very difficult
 - Consider ordering shirts for your school's principal, your sponsors, or other major supporters or sponsors
- **Decide what to put on your uniforms:**
 - Determine your **team's name, number, colors and logo**. These should be reflected in your uniforms.
 - Logos are often better if kept simple
 - Try to stick to one or two colors; the more colors the more expensive
 - Complicated logos are hard to embroider (if you choose to have anything embroidered such as polos, hats, or jackets)
 - Collect all sponsor logo/name info – this should be on your shirts
 - Artwork: Shirt distributors may request a Vector file of your images.
 - Check with your sponsors to get a Vector file. You will need digital copies of all of your sponsor's logos (even if they don't have a vector image). Ask now, it may take some time to get it to you.
 - Don't skew the aspect ratio of your Sponsor's logos on your publications – that can be a real issue and could cost you your sponsorship
- **Remember that you are creating an identity for your team, and you will be “stuck” with it for at least one season - Get your students involved in choosing these things!**