

# Rookie Conference Call #4

Tuesday, January 10, 2012, 6pm

## FIRST business

- Kit inventory – due **Friday, 1/13/2012 @ Noon!**
- DB37 Ribbon Cables - Assembled Incorrectly - Fix:  
[http://www.usfirst.org/sites/default/files/uploadedFiles/Robotics\\_Programs/FR\\_C/Game\\_and\\_Season\\_Info/2012\\_Assets/DB37%20Ribbon%20Cable%20Assembly%20-%20Rework%20Instructions.pdf](http://www.usfirst.org/sites/default/files/uploadedFiles/Robotics_Programs/FR_C/Game_and_Season_Info/2012_Assets/DB37%20Ribbon%20Cable%20Assembly%20-%20Rework%20Instructions.pdf)
- FIRST Choice –
  - get your supplies ordered NOW - Sign up right away!  
[andymark.com/firstchoice](http://andymark.com/firstchoice), frc rookie page-Q&A  
[www.frcrookies.com](http://www.frcrookies.com)
  - 100 credits to each team (not equal to dollars)
  - Main contact email address (in TIMS), and Q&A password to get into FIRST choice
  - Log in asap! Supplies are dwindling, some have already been expired
  - Suggested Items:
    - [Throttle motor \(fc12-20\)](#)
    - [Solenoid valve kit, 24V \(fc12-24\)](#)
    - [FisherPrice motor \(fc12-27\)](#)
    - [Digital Multimeter \(fc12-29\)](#)
    - [Foam Basketball \(fc12-58\)](#)
    - [Solenoid valve \(fc12-59\)](#)
    - [Sensor panel w/out header \(gyro & accelerometer\) \(fc12-62\)](#)
    - [Encoders, 2 pack \(fc12-66\)](#)
    - [Window motor, left \(fc12-67\)](#)
    - [Window motor, right \(fc12-68\)](#)
    - [Window motor, right \(fc12-71\)](#)
    - [Van Door Motor \(fc12-72\)](#)
    - [Motor/Gearbox assembly \(fc12-73\)](#)
- Rule Updates
  - Be sure to check rules “updates” - Released each Tuesday and Friday
  - Go to <http://frc-manual.usfirst.org/TeamUpdates/0> for the first update
  - First will NOT contact you about updates, but YOU need to look online for them
  - Designate a student or mentor to be the updates person
  - Have updates printed off and put in a binder for “quick reference”

## GAME

- Make sure that you re-watch the game animation several times, and that your students have all seen it.
  - Don't rely too much on the animation, as there are many inconsistencies between the video and the rules
- Field components
- Low cost plans are out there (the cheap version!)  
<http://www.usfirst.org/roboticsprograms/frc/2012-Official-FIRST-Field-Drawings>
  - Just remember that there are differences between the REAL field (the one that will be at competitions) and the LOW-COST field that you can build at your facility.
  - Differences can be detrimental to your team, as you may be able to do something on your practice field and not on the "real" field.
- Be sure to look at the field pieces – either build the pieces or look onto a veteran team's field pieces – being able to see the field can sway your thinking on HOW you may play this game.
- Clarification of game rules
  - Be sure you **KNOW HOW to PLAY the game**
  - Be sure you know **HOW to SCORE in the game**
  - Decide on what your "athlete" will be (discuss more below)
  - How do you want play the game – what is your strategy?
  - Your team will need to decide what aspects do you want to concentrate on?
  - Remember cooperation points. They can be helpful!
- *Don't try to do everything –for a rookie, it is too much!*
  - *Concentrate first on moving. Make sure that your have a reliable chassis and drive system*
- Right now, Focus on **WHAT** (game strategy), not **HOW** (drive trains, manipulators, etc.) – **HOW** will **come after the WHAT is decided**.
  - *If resources are available a suggestion is to "play" the game using students as robots to help further understand HOW you would like to play*
- Suggestion: Prioritize the 3 parts of the game – to help you determine HOW you are going to play the game
  - **Hybrid (auton – first 15 seconds)**
  - **Tele-operated**
  - **End game (last 30 seconds)**
- Keep in mind resources: financial, mentors, technology, machines, time, etc.

- SIDE NOTE: At a tournament, you need to understand the following (this will help you make decisions):
  - Qualification matches – the Friday matches (and some on Saturday)
  - Elimination matches – after qualification matches. Top 8 teams pick their partners
- Being a “Jack of all trades, master of none” will not help you to be as successful as a focused robot; others may not pick you for finals
- Strong in one area will make you more desirable for the picking; DECIDE: What can you do REALLY, REALLY well (with the hopes of being a strong alliance)?
- After deciding WHAT your strategy will be:
  - Brainstorming = crazy ideas!!!
  - Polar bear story = crazy ideas can result in amazing ideas that will work and be feasible
  - NURTURE the creativity of the students, reminding them that, “No idea is a bad idea”
  - If you keep saying “no” or “that’s not possible” (during this phase), students will stop sharing ideas
  - Collaboration is best
  - Sometimes best to break into smaller group and then come in and share with entire group
  - Put sticky notes of ideas on the board
  - Everyone’s ideas are on the board
  - Allows others to build off everyone’s ideas
  - Sort by priorities
  - **Robot’s first priority is to MOVE** - Can’t do any other task if you can’t move

### **Understand the following Rules about the Size of your Robot:**

#### **[G20]**

Robots in contact with the carpet on their Alliance Station end of the Court are limited to 60 in tall. Otherwise, Robots are limited to 84 in tall. *Violation: Foul; or Technical-Foul for repeated or continuous violation.*

#### **[G21]**

Robots may extend one appendage up to 14 in. beyond a single edge of their frame perimeter at any time. *Violation: Foul for exceeding size allotments; Technical-Foul for continuous or repeated violations.*

These appendages are intended for use in manipulating Basketballs and/or Bridges. A Robot may have multiple extension devices onboard, but only one may be deployed at a given time.

## [R02]

The Robot must satisfy the following size constraints:

1. horizontal dimensions must not exceed 28 by 38 in.,
2. the absolute height must not exceed 84 in.,
3. the height of the Robot at the start of the match must not exceed 60 in.,
4. any appendage may not extend more than 14 in. beyond the frame perimeter, and
5. no other part of the Robot may extend beyond the vertical projection of the Frame Perimeter (with the exception of minor protrusions permitted per [\[R01-2\]](#)).

Expect to demonstrate the Robot's ability to constrain itself to the envelope defined in Rule [\[R01-2\]](#) to Inspectors.

Please refer to [Section 3: The Game](#) for Robot specific dimension constraints during the Match.

If a Robot is designed as intended and pushed up against a vertical wall (with Bumpers removed and appendages retracted), only the Frame Perimeter (or its minor protrusions) will be in contact with the wall.

Understand that controlling a basketball is defined as:

## [G22]

Robots may only actively control three Basketballs at any time.

*Violation: Foul per extra Basketball*

Moving or positioning a Basketball to gain advantage is considered actively controlling. Examples are "carrying" (holding Basketballs in the Robot), "herding" (intentionally pushing or impelling Basketballs to a desired location or direction) and "trapping" (pressing one or more Basketballs against a Court element in an attempt to shield them).

Examples of Basketball interaction that are not actively controlling are "bulldozing" (inadvertently coming in contact with Basketballs that happen to be in the path of the Robot as it drives down the Court) and "deflecting" (being hit by a propelled Basketball that bounces or rolls off the Robot).

A Basketball that becomes unintentionally lodged on a Robot will be considered controlled by the Robot. It is important to design your Robot so that it is impossible to inadvertently or intentionally control more than three Basketballs at a time.

**Q: What would an Autonomous Mode (aka "Auton") look like?**

*A: This year, you have two choices, full auton and Kinect controlled*

## ROBOT PLANS and sub-teams

**Q: How do we break this project (robot) up into manageable pieces**

*A: Develop robot sub-teams based on your strategy decisions; deciding what you want to do will help you break up into groups:*

- *Example: if first priority is to **move**, then you may want to have a chassis group*
- *Examples of sub-teams:*

- *Controls/electrical, chassis, ball collection,*
- *Programming*
- *Chassis – kit, build own, purchase, use the free one that came in the Kit of Parts?*
- *Above Chassis – the part above the chassis*
- *Object manipulation sub-team – the part that manipulates the balls or objects of the game that year*
- The EngiNERDs' first year, we divided our team in to three groups: Mechanical, Electrical/Programming, and Public Relations.
  - This works well for small teams who have students with general areas of interest.
  - A PR group offers students the ability to do things outside of the robot such as safety, community service, website, photography, and do awards submissions
- As the team grows you can develop more specialized groups for your students
- Recommendation: use the **kit chassis**
  - Can do most things you need it to do
  - Don't have to worry about taking on building a complex chassis system
  - Do not build your own chassis – not enough time
  - One company, *Team 221*, is an example of somewhere you can purchase chassis kits, look for one that fits your teams goals

**Q: Do you have to have “sub-teams”?**

A: *No, but sub-teams can really help a team:*

- *Fosters ownership/responsibility*
- *Breaks up tasks*
- *Approach design in parallel instead of in series = quicker/more efficient*

**Q: How do we manage these sub-teams?**

A: *There are different philosophies on how to manage sub-teams*

- *Some teams have kids stay in sub-teams entire 6 weeks*
- *Some teams have kids rotate through sub-teams - let kids try different areas*
- *Try not to let kids do the same sub-team year after year (let them learn from the other groups)*
- *If one sub-team is done with their responsibilities, encourage those kids to help the other sub-teams*

**Q: When should we stop designing?**

A: *You need to have a design freeze by end of week; you really need to know:*

- *What part of game are you going to play?*
- *What points are you going to score?*
- *How are you going to score them?*
- *Conceptually, what does the robot look like?*
- Remember - every part becomes scrap, it's just a matter of when
  - People, especially adults, have a tendency to become attached to their design. If your team finds out that a part doesn't work like you want it to, you should find it within yourselves to scrap it and come up with a better design

## **BUSINESS**

- Determine a meeting schedule
  - Consider weekend meetings if possible - food as encouragement =)
- Encourage parents to get involved here!
  - Media/website
  - Community service
  - Bring food for late meetings
- Reminder – You also need non-technical Sub-teams
  - PR/Media
    - Continue to update sponsors/social media/website
    - Take pictures and video – DOCUMENT ALL YOU DO!
    - Takes **lots** of pictures!!
    - Keep pictures in an easily accessible place
    - Use for award submissions, newspapers, etc.
  - Website/IT
  - Community
  - Finance
- Administratively, meet once a week with everyone to get everyone on the same page
- Possibly a design review from each sub-team
- Have at least 1 mandatory meeting – to plan weekly and update goals
- Utilize team Student captains and Sub-team captains
  - Allows a student voice
  - Fosters leadership
  - Gives other students a peer to talk to if they have concerns
- Work on improvements – ask the team, “What’s going right, what needs to be improved?” (Pluses and Deltas at the end of every meeting/competition)
- Create a team list including:
  - Students

- Mentors – where they work and what they do – they may be able to help you out!
- Parents – where they work and what they do – they may be able to help you out!

**Q: Sponsorships, do you recommend a form letter/packet/etc.?**

A: Gail Alpert will be sending out information for all Rookie teams on how to obtain sponsorship. We will attach with these notes. It is posted on the FRC Rookies Website: [www.frcrookies.com](http://www.frcrookies.com)

Some suggestions (per Gail Alpert - FIRST in Michigan):

- *Keep it simple and to the point: don't overload it but do give info on what FIRST and your team are all about*
- *Write a desperate letter! Why is it so important for this company to donate funds to you?*
- *Sit with parents and mentors and find companies where you know people (the higher up the better).*
- *Go to the engineering departments – not marketing or HR....engineering will understand why this is valuable. Will get more support from engineering/CEO – raising engineering future.*
- *Relate it to the needs of the company.*
- *If possible, target companies you think can give you more money ~\$5000 (more bang for your buck) – but any amount will help*
- *Let kids do the selling*
- **Ask for in-kind donations!**
- *Aluminum, fasteners, meals, uniforms etc.*
- **Don't forget to thank your sponsors! Not thanking sponsors can be the fastest way to lose them!**
- *Another possibility: Team RUSH uses a cover letter and a one-pager (find it on [www.teamrush27.net](http://www.teamrush27.net) in the Toolkit Chapter 5 - sponsorship).*

**JCPenny grants – If you were able to secure this grant:**

- Make them an integral part of team
- Make contact with them and invite them to team meetings
- Show them the animation so they understand the game
- Maybe they can help with uniforms, fundraising, etc.
- Maybe they have technical people who may want to get involved

**General note: Utilize contacts of your parents and mentors:**

- Call an emergency parent meeting – get their contacts!
- Brainstorm who they know who could help out
- May not have a degree in something but may be really good at something that will help the team, ie. tinkering, photography, etc.
  
- **General note:** *Make sure you understand the bumpers and rules around the volume of your robot! More to say on that next week.*

**Chassis:** <http://www.usfirst.org/roboticsprograms/frc/2012-kit-of-parts-drive-system>

**Electrical:** <http://www.usfirst.org/roboticsprograms/frc/2012-kit-of-parts-electrical>  
**Robot Controls (cRIO):** <http://www.usfirst.org/roboticsprograms/frc/2012-kit-of-parts-control-system>

**Driver Station:** <http://www.usfirst.org/roboticsprograms/frc/2012-kit-of-parts-driver-station>