



HYDEE

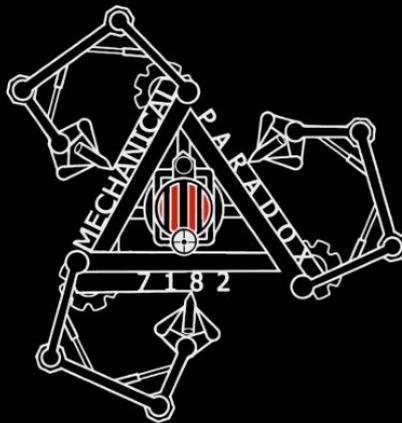


Hi, I'm Hydee. I am the Lady of the Lexan and the Safeguard of the Socks. I am 17 years old, and in my senior year. I have been involved with FTC for three years now, and have enjoyed every minute of it. I take pleasure in reading classics (I'm a total Lord of the Rings geek) and writing novels, but my greatest pleasure comes from having met some of my best friends through robotics. I love being involved in FIRST and love the principles that it teaches.

Hi, I'm Jolie! I am the Magical Guinea Pig and the Demolisher. I am 13 years old and in 8th grade. This is my third year with FTC, my second year on Mechanical Paradox. I am the project lead on the Engineering Notebook, but I also work on programming and spend little bit of time working on the robot here and there. I am an animal person, owning 3 guinea pigs and 2 dogs. My hobbies include reading, writing, volunteering at an animal shelter, and of course, FTC. I have been learning a lot this year and I look forward to learning a lot more.



JOLIE



Engineering Notebook 101

FTC Team 7182
Mechanical Paradox

What is an Engineering Notebook?

The Engineering Notebook is a complete documentation of the Team's Robot design. This documentation should include sketches, discussions, Team meetings, design evolution, processes, obstacles, and each Team member's thoughts throughout the journey for the entire season.

Why is it Important?

- Accurate Record
- Team Memory
- Awards
- Real World Practice

Which Notebook?

Pretend you're a Judge! Which one would you choose?

Meeting Documents

DATE:	START TIME:	STOP TIME:
September 6, 2014	10:00	5:00

TASKS	REFLECTIONS
LAN Party Thomas	To celebrate our kickoff this year, I invited the LIGHTSABERS teams to come to my house to play a LAN party of Team Fortress 2. We started off by playing games for the first hour or so until the game was released. After the game was released, we went downstairs to eat and discuss the games and throw out some basic ideas.



LAN Party

TASKS	REFLECTIONS
Kickoff Thomas	Mustang High School was hosting an official kickoff this year so we went there to see the actual playing field and talk with the other teams. We continued to discuss ideas with each other and eventually got onto the field where we tested our FTC® BLOCK PARTY™ robot from last year to see how well it scored the balls into the goals. After testing, we decided that our old design could possibly work if we modified it to fit the game rules and designs, but we were not set on an actual design yet.



1

2

FTC #6134 Black Frogs

Date: 9-25

Task	Reflections
To determine how fast our robot can turn...	$\text{Speed} = \frac{\text{circumference}}{\text{time}} \times \text{force}$ $= 1.5 \frac{\text{rev}}{\text{sec}} \times 12.6 \frac{\text{in}}{\text{sec}} = 18.9 \frac{\text{in}}{\text{sec}} = \frac{18.9 \text{ in}}{\text{sec}} \times \frac{1 \text{ min}}{60 \text{ sec}} = 1.0738 \text{ mi/hr}$ <p>Dimensional Analysis</p> $\frac{18.9 \text{ in} \times 1 \text{ min}}{1 \text{ sec} \times 60 \text{ sec}} \times \frac{3600 \text{ sec}}{1 \text{ hr}} = 18.9 \times 3600 = 1.0738 \text{ mi/hr}$
Determine pushing force	$\text{Torque} = \text{force} \times \text{radius}$ $\text{Force} = \frac{\text{Torque}}{\text{radius}} = \frac{32.0 \times 4 \text{ in} \cdot \text{oz}}{2 \text{ in}} = 64.0 \text{ oz} = 4.016 \text{ lb}$
Determine least amount of radius on turn.	<p>Before: </p> <p>After: </p> <p>This is better because radius is shorter</p>

Recorded by: Anshik Wajpa, Nishay Agrwal

Eo-1

10.11.14 Filming RoboTalk!

Duration 12:00 noon - 5:00 pm

Attendance:
Chris, Bo, Matthew, Marcos, Aidan, PJ, Kristen, Coach, Mrs. Laker, Mrs. McKellar, Mr. Solomon

Tasks:	Reflections:
<ol style="list-style-type: none"> Disassemble our previous season's robot "The Black Pearl" Review all CAD files for our swerve drive Film first episode of "RoboTalk" a) Get our old driving files working on our new robot <ol style="list-style-type: none"> Write a program to record IR sensor readings under specified parameters and datalog those readings 	<ol style="list-style-type: none"> Today I had the sad duty of disassembling last seasons robot, The Black Pearl. First I gutted the electronics panel and moved on to the winch and lift mechanisms to finish. —AMP  <p>Saying goodbye to The Black Pearl</p> After each of us working on a separate part of the swerve drive, Matt, Bo, and Chris reviewed all the files they had been working on for the teams custom drive system. They then shared the files via the teams hard drive so they all could have the complete swerve drive virtually. (See details.) We took our camera (iPhone) and blue screen and went to one of ETC's closed offices to film. (See details.) a) We were able to change the files slightly and get the robot driving. (See details.) <ol style="list-style-type: none"> We created a program to record the IR over a selected distance with a selected number of samples. (See details.)

Details:
1. No additional details

Reviewed:

26

3

4

30

Continued from page

MEETING

TASKS	REFLECTIONS
<ul style="list-style-type: none"> WIRE THE ROBOT REMODEL THE LIFT GET THE GOAL MANIPULATOR DONE BUILD SIDE PANELS 	<ul style="list-style-type: none"> WE NOW HAVE ALL THE MAJOR COMPONENTS ON THE ROBOT WE STILL NEED ELECTRONICS SIDE PANELS NEED TO BE BUILT WE NEED TO MAKE SOME CHANNELS FOR STRINGS

WE FINISHED RECONSTRUCTING THE LIFT FOR THE CHANGE IN DIMENSION ROTATION. WE ALSO BEGAN CONSTRUCTION ON THE MECHANISM IN THE HARVESTER TO DIVERT THE BALLS INTO THE DISHOWER. WE HAD BEEN A TOP PLATE AND A CURVED PANEL THAT HITS THE BALLS BUT DOES NOT HIT THE PADDLES. THIS PUSHES THE BALLS BUT THE SIDE OF THE HARVESTER. THE GEAR SKIRT WAS ALSO FINISHED AND MOUNTED. SO NOW THE GEAR KING UP WITH IT WHEN WE PUSH THEM. WE ARE STILL WORKING ON WHERE THE ELECTRONICS WILL GO, BUT WE DID GET ALL OF THE CONTROLLER MOUNTED TO THE SIDES OF THE HARVESTER. THOUGH WE STILL NEED TO MOUNT THE SAMANTHA, NEXT BATTERY, AND SWITCH PANEL. THE SIDE PANELS ARE REMOVED. BUT SO BE BUT ON. THOUGH THEY NEED TO BE PRINTED. ONCE WE GET THOSE ON, THE ROBOT WILL BE DONE.



Reviewed:

Date: 11-15-14

DATE

11-15-14

Continued to page

PROPRIETARY INFORMATION

Notebook 1

4250



4250

Meeting Documents

DATE:	START TIME:	STOP TIME
September 6, 2014	10:00	5:00

TASKS	REFLECTIONS
LAN Party Thomas	To celebrate our kickoff this year, I invited the LIGHTSABERS teams to come to my house to play a LAN party of Team Fortress 2. We started off by playing games for the first hour or so until the game was released. After the game was released, we went downstairs to eat and discuss the games and throw out some basic ideas.



LAN Party

TASKS	REFLECTIONS
Kickoff Thomas	Mustang High School was hosting an official kickoff this year so we went there to see the actual playing field and talk with the other teams. We continued to discuss ideas with each other and eventually got onto the field where we tested our FTC® BLOCK PARTY!™ robot from last year to see how well it scored the balls into the goals. After testing, we decided that our old design could possibly work if we modified it to fit the game rules and designs, but we were not set on an actual design yet.

Notebook 1

Team Name & Number

4250



4250

Meeting Documents

DATE:	START TIME:	STOP TIME:
September 6, 2014	10:00	5:00

Date + Start & Stop times

TASKS	REFLECTIONS
LAN Party Thomas	To celebrate our kickoff this year, I invited the LIGHTSABERS teams to come to my house to play a LAN party of Team Fortress 2. We started off by playing games for the first hour or so until the game was released. After the game was released, we went downstairs to eat and discuss the games and throw out some basic ideas.

Picture



LAN Party

Record of who wrote it

TASKS	REFLECTIONS
Kickoff Thomas	Mustang High School was hosting an official kickoff this year so we went there to see the actual playing field and talk with the other teams. We continued to discuss ideas with each other and eventually got onto the field where we tested our FTC® BLOCK PARTY!™ robot from last year to see how well it scored the balls into the goals. After testing, we decided that our old design could possibly work if we modified it to fit the game rules and designs, but we were not set on an actual design yet.

Session # 6

Date: 9-25

Task	Reflections
To determine how fast our robot can turn cont...	$\text{Speed} = \text{rotor speed} \times \text{radius}$ $= 1.5 \frac{\text{rev}}{\text{sec}} \times 12.6 \frac{\text{in}}{\text{sec}} = \frac{18.9 \text{ in}}{\text{sec}} = \frac{18.9 \text{ in}}{1 \text{ hr}}$ <p>Dimensional Analysis</p> $\frac{18.9 \text{ in}}{1 \text{ sec}} \times \frac{1 \text{ min}}{60,300 \text{ in}} \times \frac{3600 \text{ sec}}{1 \text{ hr}}$ $= \frac{18.9 \times 3600}{63,360} = 1.07386 \text{ mi/hr}$
Determine pushing force	<p>- Torque = force \times distance</p> $\text{Force} = \frac{\text{Torque}}{\text{radius}} = \frac{320 \times 4 \text{ in} \cdot \text{oz}}{2 \text{ in}}$ $= 640 \text{ oz} = 40 \text{ lb f}$
Determine least amount of radius on turn.	<p>Before</p>  <p>After</p>  <p>This is better because radius is shorter</p>

Recorded by:

Ankith Wajpa, Nishita, Arnav

Notebook 2

Notebook 2

Meeting Number
and Date

Session # 6

Date: 9-25

Math!

FTC #6134 Black Frogs

Task	Reflections
To determine how fast our robot can turn.	$\text{Speed} = \text{rotations} \times \text{circumference}$ $= 1.5 \frac{\text{rev}}{\text{sec}} \times 12.6 \frac{\text{in}}{\text{sec}} = \frac{18.9 \text{ in}}{\text{sec}} = \frac{18.9 \text{ in}}{1 \text{ hr}}$ <p>Dimensional Analysis</p> $\frac{18.9 \text{ in}}{1 \text{ sec}} \times \frac{1 \text{ min}}{60,000 \text{ in}} \times \frac{3600 \text{ sec}}{1 \text{ hr}}$ $= \frac{18.9 \times 3600}{60,000} = 1.07386 \text{ mi/hr}$
Determine pushing force	$\text{Torque} = \text{force} \times \text{distance}$ $\text{Force} = \frac{\text{Torque}}{\text{radius}} = \frac{320 \times 4 \text{ in-oz}}{2 \text{ in}}$ $= 640 \text{ oz} = 40 \text{ lb f}$

Drawings & Info

Determine least amount of radius on turn.

Before After

This is better because radius is shorter

Signatures

Recorded by:

Ankith Wajpa, Nishita, Arnav

Notebook 3

10.11.14 Filming RoboTalk!

Duration 12:00 noon - 5:00 pm

Attendance:

Chris, Bo, Matthew, Marcos, Aidan, P.J., Kristen, Coach, Mrs. Laker, Mrs. McKellar, Mr. Solomon

Tasks:

1. Disassemble our previous season's robot "The Black Pearl"
2. Review all CAD files for our swerve drive
3. Film first episode of "RoboTalk!"
4. a) Get our old driving files working on our new robot
b) Write a program to record IR sensor readings under specified parameters and datalog those readings

Reflections:

1. Today I had the sad duty of disassembling last seasons robot The Black Pearl. First I gutted the electronics panel and moved on to the winch and lift mechanisms to finish. --AMP



2. After each of us working on a separate part of the swerve drive, Matt, Bo, and Chris reviewed all the files they had been working on for the teams custom drive system. They then shared the files via the teams hard drive so they all could have the complete swerve drive virtually. (See details.)
3. We took our camera (iPhone) and blue screen and went to one of ETC's closed offices to film. (See details)
4. a) We were able to change the files slightly and get the robot driving. (See details.)
b) We created a program to record the IR over a selected distance with a selected number of samples. (See details.)

Details:

1. No additional details

Notebook 3

Date, Meeting Goal,
and Start-Stop times

Attendance

Picture

Extra Details Section

10.11.14 Filming RoboTalk!

Duration 12:00 noon - 5:00 pm

Attendance:

Chris, Bo, Matthew, Marcos, Aidan, PJ, Kristen, Coach, Mrs. Laker, Mrs. McKellar, Mr. Solomon

Tasks:

1. Disassemble our previous season's robot "The Black Pearl"
2. Review all CAD files for our swerve drive
3. Film first episode of "RoboTalk!"

Reflections:

1. Today I had the sad duty of disassembling last seasons robot The Black Pearl. First I gutted the electronics panel and moved on to the winch and lift mechanisms to finish. —AMP



files working on our new robot

- a) Write a program to record IR sensor readings under specified parameters and datalog those readings

2. After each of us working on a separate part of the swerve drive, Matt, Bo, and Chris reviewed all the files they had been working on for the teams custom drive system. They then shared the files via the teams hard drive so they all could have the complete swerve drive virtually. (See details.)
3. We took our camera (iPhone) and blue screen and went to one of ETC's closed offices to film. (See details)
4. a) We were able to change the files slightly and get the robot driving. (See details.)
b) We created a program to record the IR over a selected distance with a selected number of samples. (See details.)

Details:

1. No additional details

Notebook 4

30

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MEETING

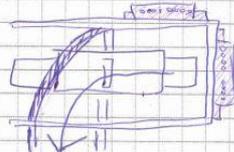
TASKS

- WIRE THE ROBOT
- REMOUNT THE LIFT
- GET THE GOAL MANIPULATOR DONE
- BUILD SIDE PANELS

REFLECTIONS

- WE NOW HAVE ALL THE MAJOR COMPONENTS ON THE ROBOT
- WE STILL NEED ELECTRONICS
- SIDE PANELS NEED TO BE PAINTED
- WE HAD TO MAKE SOME CHANGES FOR SIZING

WE FINISHED RECONSTRUCTING THE LIFT FOR THE CHANGE IN DISPENSER ROTATION. WE ALSO BEGAN CONSTRUCTION ON THE MECHANISM IN THE HARVESTER TO DIVERT THE BALLS INTO THE DISPENSER. WE HAVE BOTH A TOP PLATE AND A CURVED PANEL THAT HITS THE BALLS BUT DOES NOT HIT THE PADDLES. THIS PUSHES THE BALLS



OUT THE SIDE OF THE HARVESTER. THE GOAL SKIRT WAS ALSO FINISHED AND MOUNTED SO NOW THE GOALS LINE UP WITH IT WHEN WE PUSH THEM. WE ARE STILL WORKING ON WHERE THE ELECTRONICS WILL GO, BUT WE DID GET ALL OF THE CONTROLLERS

MOUNTED TO THE SIDES OF THE HARVESTER, THOUGH WE STILL NEED TO MOUNT THE SAMANTHA, NXT, BATTERY, AND SWITCH PANEL. THE SIDE PANELS ARE ALMOST READY, SO ARE PUT ON, THOUGH THEY NEED TO BE PAINTED. ONCE WE GET THOSE ON, THE ROBOT WILL BE DONE.

Continued to page

SIGNATURE

Gavin Dineen

DATE

11-15-14

DISCLOSED TO AND UNDERSTOOD BY

DATE

PROPRIETARY INFORMATION

Notebook 4

Organized tasks

-Two columns of tasks and reflections and then narrative

Sketch

Signature and Date

30 Continued from page

MEETING

TASKS	REFLECTIONS
<ul style="list-style-type: none">• WIRE THE ROBOT• REMOUNT THE LIFT• GET THE GOAL MANIPULATOR DONE• BUILD SIDE PANELS	<ul style="list-style-type: none">• WE NOW HAVE ALL THE MAJOR COMPONENTS ON THE ROBOT• WE STILL NEED ELECTRONICS• SIDE PANELS NEED TO BE PAINTED• WE HAD TO MAKE SOME CHANGES FOR SIZING

WE FINISHED RECONSTRUCTING THE LIFT FOR THE CHANGE IN DISPENSER ROTATION. WE ALSO BEGAN CONSTRUCTION ON THE MECHANISM IN THE HARVESTER TO DIVERT THE BALLS INTO THE DISPENSER. WE HAVE BOTH A TOP PLATE AND A CURVED PANEL THAT HITS THE BALLS AND PUSHES THEM OUT THE SIDE OF THE HARVESTER. THE GOAL SKIRT WAS ALSO FINISHED AND MOUNTED SO NOW THE GOALS LINE UP WITH IT WHEN WE PUSH THEM. WE ARE STILL WORKING ON WHERE THE ELECTRONICS WILL GO, BUT WE DID GET ALL OF THE CONTROLLERS MOUNTED TO THE SIDES OF THE HARVESTER, THOUGH WE STILL NEED TO MOUNT THE SAMANTHA, NXT, BATTERY, AND SWITCH PANEL. THE SIDE PANELS ARE ALMOST READY, SO ARE PUT ON, THOUGH THEY NEED TO BE PAINTED. ONCE WE GET THOSE ON, THE ROBOT WILL BE DONE.

Continued to page

Signature: *Kevin Dineen* DATE: 11-15-14

PROPRIETARY INFORMATION

Electronic

Computer Based Engineering Notebook.

FTC Team 7182
Mechanical Paradox

FTC Season 2014/2015 Page 58-1

Meeting Number 58 - 11 February 2015, 7:35 PM - 10:15 PM

Today's Goals:	Attendance:																																																								
<ul style="list-style-type: none">Work on new autonomous programs.Create a frame to guide the tube base into the right position.Continue working on sprocket drive for slide motors.	<table border="1"><thead><tr><th>S</th><th>A</th><th>X</th><th>M</th><th>E</th><th>D</th><th>X</th></tr></thead><tbody><tr><td>T</td><td>H</td><td>X</td><td>N</td><td>T</td><td>M</td><td>X</td></tr><tr><td>U</td><td>J</td><td>X</td><td>O</td><td>R</td><td>M</td><td>X</td></tr><tr><td>D</td><td>J</td><td>X</td><td>R</td><td>S</td><td>M</td><td>X</td></tr><tr><td>E</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>N</td><td>K</td><td>X</td><td></td><td></td><td></td><td></td></tr><tr><td>T</td><td>L</td><td>X</td><td></td><td></td><td></td><td></td></tr><tr><td>S</td><td>O</td><td>X</td><td></td><td></td><td></td><td></td></tr></tbody></table>	S	A	X	M	E	D	X	T	H	X	N	T	M	X	U	J	X	O	R	M	X	D	J	X	R	S	M	X	E							N	K	X					T	L	X					S	O	X				
S	A	X	M	E	D	X																																																			
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U	J	X	O	R	M	X																																																			
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E																																																									
N	K	X																																																							
T	L	X																																																							
S	O	X																																																							

Tasks	Reflections
Test new linear slide	<ul style="list-style-type: none">In between meetings, John and Kieran switched out slide frames to the new ones. These were custom cut to be 14 inches high (one inch higher than they were before). They also changed the screws that were being used to attach the slide connectors.Lift Test 1: The plastic cable holders that we got from Misumi don't actually hold much weight. We are going to replace them with studs.<ul style="list-style-type: none">Height -- 37 1/4 inches1st Stage: 13 1/43rd Stage: 194th Stage: 255th Stage: 30 1/4Basket Stage: 36 3/4Lift Test 2: We fixed the slides to be more parallel.<ul style="list-style-type: none">Height -- 50 inches1st Stage: 14 1/22nd Stage: 243rd Stage: 33

Recorded by:	Date:
Olivia	11 Feb 2015

Handwritten

Hard Copy, Paper and Pen Engineering Notebook.

November 29, 2013 Attendance: Kieran, John, Olivia
Start Time: 2:32 Mentors: Mr. Dan, Mr. Jon

Goals for Today: on

- Motorize the robot.
- Attach the proper axles to the single conveyor.
- Figure out the ramp placement.
- Take a team photo.

Stuff to Buy:

- More 100 mm axles
- More flat 2.8mm bars
- More axle hubs (lots of them)
- A few more cone gears
- Extension cards for servo wires
- A vice cutter

Today's Tasks

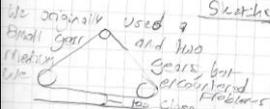
- Motorize the robot

WB Reelators

- We successfully geared both sides of the robot.
- We encountered problems with speeds when we did so, because the tensions on the chains were different.
 - We ran tests to confirm the speed was different. We marked the square line on each side and ran them simultaneously to see where each link would end up.
- We added a brace to multipurpose as a support and a mount for flexi-gears.

Sketches

We originally used a small gear and two medium gears, but overcomplicated it. We changed it to one medium and two small gears and it made it better.



Choices, Choices, Choices...

An Engineering Notebook's design depends on your team. If it's easier for your team to use an Electronic Notebook, use an Electronic Notebook. If it's easier for your team to use a Handwritten Notebook, then use a Handwritten Notebook. It depends on your team's style, workplace, and so much more. We have used both and both types can work well. Here are some advantages and disadvantages of both Electronic and Handwritten Engineering Notebooks.



Pros to an Electronic Notebook

Pros:

- Easy to share with your team and collaborate
- You don't have to worry about "Bad" handwriting
- "Unlimited" pages
- Flexibility with design (easy to develop and edit meeting templates)
- Easy to change if needed
- Cost effective (Google Drive, OneDrive, etc.)
- Easy to correct spelling errors, etc.

Cons to an Electronic Notebook

Cons:

- You need access to a computer to be able to record things
- Can't sketch directly into it
- Can't access if you don't have connection to WiFi (Unless you aren't sharing over a cloud)
- Can be hard to change it over to a different program (Office to Drive, etc.)
- Can be tempting to make it homework, instead of recording important events as they happen

Pros to a Handwritten Notebook

Pros:

- Easy to write in while working
- Easy to sketch in
- You can design each page very easily (Especially with a ruler)
- You can put photos, printouts, etc. in without having to scan them first
- Conveniently portable

Cons to a Handwritten Notebook

Cons:

- You can't have multiple people working in the Notebook at the same time
- You have to worry about anything touching it and messing it up (Food, drinks, etc.)
- You can run out of pages
- There is no spell/grammar check for paper (no instant corrections)

Make sure you read the rules very carefully

Notebook Requirements

1. Teams may not submit more than two notebooks at a competition.
2. The Team Number and Team Name must appear on the outside of the Engineering Notebook. Engineering Notebooks will not be considered without this information.
3. Attach a summary page to the front cover of the Engineering Notebook. The summary should be a brief, one-page narrative about the Team, the school or organization, and an overview of the highlights of the Team's season. The Team summary page should also include the Team number and point the Judges to pages in the Engineering Notebook that the Team would most like the Judges to consider.
4. The Engineering Notebook must be divided into multiple sections, including:
 - a. An Engineering Section that includes the Robot design processes.
 - b. A Team Section that includes information about the Team and outreach activities.
 - c. A business plan, strategic plan or sustainability plan.

Important Points to Remember

1. Document EVERYTHING! (Literally)

- Design Decisions
- Sketches
- Math equations
- Fundraisers
- Outreach Events
- Prototypes
- Test results
- Diagrams
- Competition Results

2. Don't be afraid to document mistakes

HW 9/10/16

Writing ~~Mistakes~~ Mistakes

- Scratch it, initial it, date it

Mistakes in the building process

- Record Them!

4. Put X's in blank spaces

3/5/13

Options we discussed:

- ~~Auto~~ Navigate ramp efficiently
- Sense IR beacon and score in goal, in auto
- Scoring blocks in basket in tele-op
- Balance goals
- raise flag
- climb chin-up bar
- Fling?

Bot ideas

	Bot 1	Bot 2	Bot 3
Auto	IR, Ramp	Ramp	IR Ramp?
Tele	Blocks basket ramp	push ramp	Fast block scorer and balancer
End	Blocks balance	Flag	chin-up bar

21

would.



Goals for Next Time:

- ▶ Test and fix autonomous.
- ▶ Program new autonomous.
- ▶ Work on linear slides.
- ▶ Work on ball collection.

Robot Notes Page 2

5. Ask Questions

Don't forget to ask yourselves important questions:

- What worked?
- What didn't work?
- Why?
- How can we tackle this problem?
- How has our building process changed and developed?

Follow ALL The Rules

Awards

Think...

... Team that best reflects the journey the Team took as they experienced the engineering design process during the build season. The Engineering Section of the notebook is the key reference for judges to help identify the most deserving Team. The Team's Engineering Section must focus on the design and build stage of the Team's Robot. Journal entries must include those describing the underlying science and mathematics of the Robot design and game strategies, the designs, redesigns, successes, and opportunities for improvement.

A Team is not a candidate for this award if they have not completed the Engineering Section of the Engineering Notebook.

Required Criteria for the Think Award

Engineering Notebook must:

- have an Engineering Section that includes entries describing underlying science, mathematics, and game strategies.
- demonstrate that the Team has a clear understanding of the engineering design process, with pictures or drawings and details documenting all stages of Robot design.
- recount the Team's journey, experience and lessons learned throughout the season.

Inspire Award

... truly embodied the 'challenge' of the FIRST Tech Challenge program ... a strong ambassador for FIRST programs and a role model FIRST Tech Challenge Team

Required criteria for the Inspire Award:

Engineering Notebook must be submitted, and must include an Engineering Section, a Team Section and a Business or Strategic Plan. The entire Engineering Notebook must be high quality, thoughtful, thorough, detailed and well organized.

Rockwell Collins Innovate Award

... thinks outside the box ... most innovative and creative Robot design solution ...

The Team's Engineering Notebook should be marked with journal entries to show the design of the component(s) and the Team's Robot in order to be eligible for this award, and entries should describe succinctly how the Team arrived at that solution.

Required criteria for the RC Innovate Award:

Team must submit an Engineering Notebook with an Engineering Section that documents the design process and how the Team arrived at their design solution.

Motivate Award

... embraces the culture of FIRST and clearly demonstrates what it means to be a Team ... exemplifies the essence of the FIRST Tech Challenge competition through Team building, Team spirit and exhibited enthusiasm.

Required criteria for the Motivate Award:

An Engineering Notebook must be submitted and must include a Business or Strategic plan that identifies their future goals and the steps they will take to reach those goals. The plan could include fundraising goals, sustainability goals, timelines, outreach, and community service goals.

Connect Award

... given to the Team that most connects with their local science, technology, engineering and math (STEM) Community...

This Team has a clear Business or Strategic Plan and has identified steps to achieve their goals.

Required criteria for the Connect Award:

An Engineering Notebook must be submitted and must include a **Business or Strategic plan** that identifies their future goals and the steps they will take to reach those goals. The plan could include fundraising goals, sustainability goals, timelines, outreach, and community service goals.

PTC Design Award

...recognizes design elements of the Robot that are both functional and aesthetic.
... presented to Teams that incorporate industrial design elements into their solution.

Required criteria for the PTC Design Award:

Team must submit an Engineering Notebook with an Engineering Section that includes detailed Robot design drawings.

Highest Ranking Team Not Previously Advanced...

Required criteria:

Based on qualifying ranking...

Does NOT require Engineering Notebook!

Control Award

... uses sensors and software to enhance the Robot's functionality on the field ...
demonstrates innovative thinking in the control system to solve game challenges

... The Team's Engineering Notebook must contain details about the implementation of the software, sensors, and mechanical control.

Required criteria for the Control Award:

The Engineering Notebook must include an Engineering Section that documents the control components.

Notebook is Important (Necessary) for Most Awards

Necessary for:

Think

Inspire

Connect

Rockwell Collins Innovate

PTC Design

Motivate

Control

Not necessary for:

Promote (optional award for making promotional video)

Compass (coach/mentor award, also video)

Judges award (optional)

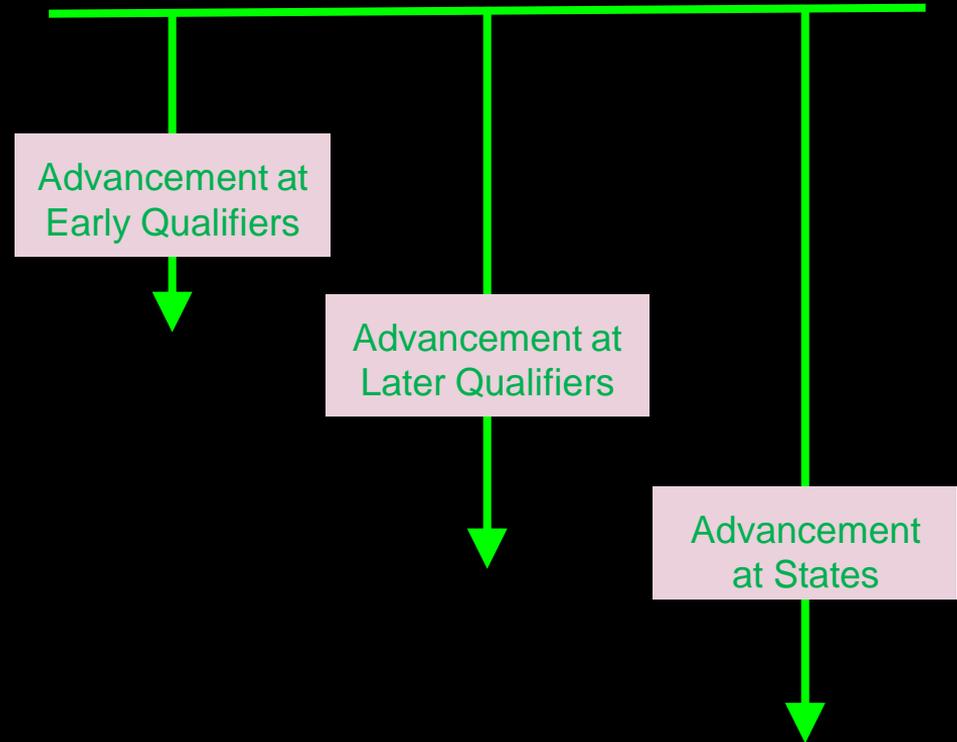
Winning Alliance

Finalist Alliance

Highest Ranked Team not previously advanced...

Advancement Criteria

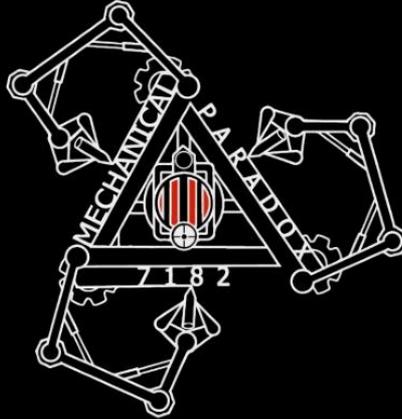
1. Inspire ← Notebook required
2. Winning Alliance Captain
3. Inspire 2nd ← Notebook required
4. Winning Alliance 1st team selected
5. Inspire 3rd ← Notebook required
6. Winning Alliance 2nd team selected
7. Think Award ← Notebook required
8. Finalist Captain
9. Connect ← Notebook required
10. Finalist 1st selected
11. RC Innovate ← Notebook required
12. Finalist 2nd selected
13. PTC Design ← Notebook required
14. Motivate ← Notebook required
15. Control ← Notebook required



Why is the Notebook so
important to FIRST?

Questions?

Contact Us!



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