



KILLER BEES ROBOTICS

TWENTY YEARS OF TECHNOLOGY





Teach All Students Leadership Skills... and Good Things Will Happen

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FRC Team 33 – Killer Bees





Quote of the day

**“There go my people,
I must follow them,
because I am their leader”**

- Ghandi



Goals





Nuggets of our knowledge

- Getting students on the team and what to do with them once they join.
- Targeted recruiting to girls.
- Training Leadership without teaching leadership
- Team Organization and a painful “ah-ha” moment
- Changing our internal culture
- Selecting Team Leaders



Recruiting

- The Killer Bees are an exclusive club; not everyone who applies gets in.
- We aim to have about twice as much demand to join as we have capacity for
- We target nearly all of our student recruiting at middle school and incoming freshmen.
- Nearly all of students will be on our team for 4 years.
- Ideal team structure is 10 students per grade, roughly 1/3-1/2 female.

Recruiting

Killer Bees Female Participation Percentage by Year





Who are the Killer Bee Students?

Performing Arts

- Color Guard*
- Marching Band*
- Jazz Band
- Fall Musical*
- Spring Play*
- Honors Women's Ensemble
- Women's Choir
- Freshman Choir
- Honors Chamber Choir
- Irishmen

Service

- Liturgy Commission*
- Retreat Commission*
- Girl Scouts / Boy Scouts*
- National Honor Society*
- Spanish National Honor Society
- Chinese National Honor Society

Athletics

- Cross Country (Varsity)*
- Track (Varsity)*
- Basketball (Varsity)*
- Hockey
- Baseball
- Softball
- Bowling
- Volleyball*
- Cheerleading

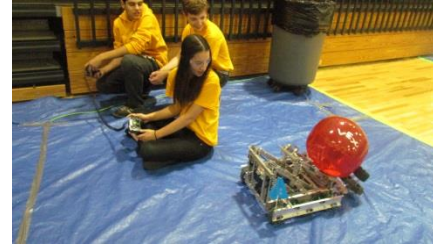
Clubs

- Art Club
- Environmental Club
- Creative Writing Club*
- Improv Club
- Optimist Club
- Ping Pong Club
- Math Club
- Chinese Club

* Denotes a Killer Bee student leader



Recruited, now what?



- Fall season – OCCRA and VEX leagues develop technical and leadership skills. Allows opportunity for students who are not on the FRC team to experience STEM learning outside of the school day.
- FRC projects – develop and test new ideas
- Meeting structure
 - Entrance at secure facility
 - Food
 - Meeting plan
 - Work
 - Wrap up
 - Exit secure facility
- Each meeting starts with a team discussion on what needs to be accomplished.
 - Students and mentors work collaboratively to accomplish task.
 - Students report back at wrap up.

Start skill development





Year Round Development Opportunities

<i>Month</i>	<i>FRC</i>	<i>Team 33</i>	<i>VEX</i>	<i>OCCRA</i>
August			Build	
September	Develop/Test	Recruitment	Build/Compete	New Game
October	Develop/Test	Weekly meetings	Build/Compete	Design/Build
November	Develop/Test	Weekly meetings	Build/Compete	Compete
December		Weekly meetings	Compete	Wrap-up
January	Kickoff	Daily meetings		
February	Design/Build	Daily meetings	State Championship	
March	Compete	Daily meetings		
April	Michigan State Championship FIRST Championship	Weekly meetings	World Championship New game	
May		Weekly meetings	Design	
June / July		Weekly meetings	Design/Build	



FRC is **NOT** a 6 week program, it is a 52 week program

Training Leadership

- We do not have leadership classes. We want to use our time for STEM skill development, but we actively work with our students to improve the “soft” skills.



Students learn to present to the entire group in both engineering and business topics. NewBees are coached to speak to the group by the student leader.



TOP 10 KILLER BEES RULES

1. **Show Up:** We are a team. To be a part of the team you need to be here, and be on time.
2. **Speak Up:** Communication is the key to teamwork. Your ideas matter and we want to hear them.
3. **Listen Up:** There is a time to talk and a time to listen; know the difference.
4. **Smarten Up:** The goal of our program is to make you smarter. Aggressively learn as much as you can.
5. **Step Up:** Take charge of your work and become a valued member of the team. Good work benefits the entire team.





TOP 10 KILLER BEES RULES

6. **Grow Up:** Everyone on the team is an adult, we will treat you as adults as long as you act like adults.
7. **Clean Up:** Our workspace is our home. We all need to work together to keep it clean, safe, and productive.
8. **Hurry Up:** Time is our scarcest resource. Take the time to do good work, but get things done quickly.
9. **Live It Up:** Robotics is hard work, and hard work is fun. Enjoy every moment because it doesn't get better than this.
10. **Never Give Up:** The Killer Bees are great because we never stop trying to improve. We will never lose if we never give up!



GO BEES!!!

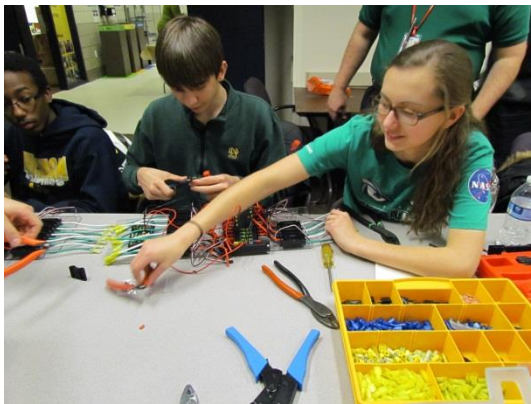


Team Organization

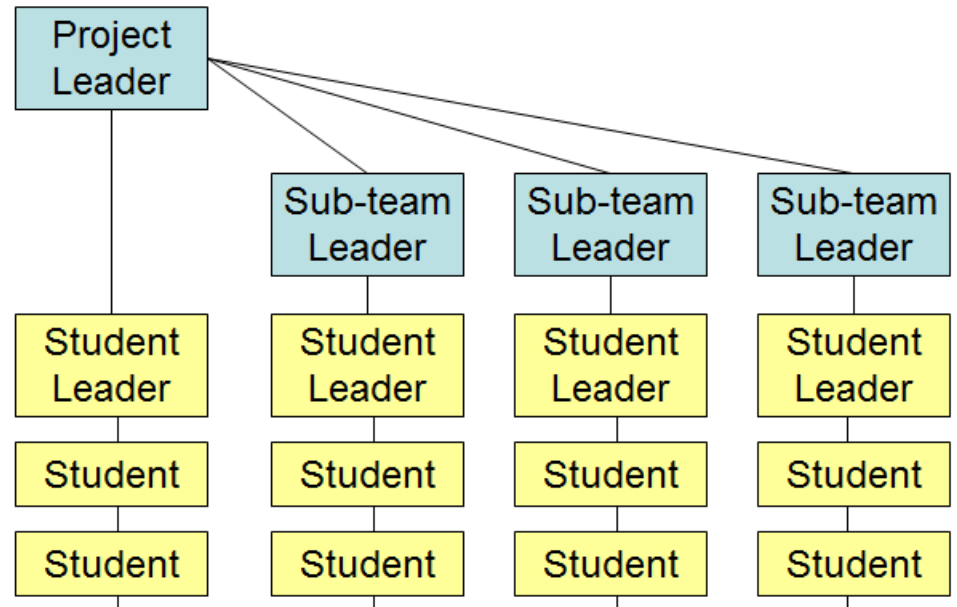
- The Killer Bees are a “Meritocracy”if you do good work, good things will happen.
- Student Exit Interviews in 2008 made us re-think a lot of what we were doing.
- From September through week 5 of build season, we have no formal team leaders.
- Week 5 of build season, the mentors meet and discuss student team leaders.
- While many student roles can be assumed based on the past, leadership is not publicly announced until the project is nearly completed.



Flexible Sub-teams



Team Organizational Structure





Changing our internal culture

- Building robots is fun.
- Some things we do as team are tedious and are critical to our success.
 - Scouting data collection
 - Programming
 - Awards documentation and submissions
 - Media management
- Incentives are key.
 - Buying student's dinner
 - Traveling with team during offseason (IRI)
 - Mentors write recommendation letters for college, scholarship applications and job applications.
 - Specific, directed and positive reinforcement to entire team about a certain student or sub-team.
 - First through the food line at team meetings.



Selecting team leaders

- Each year, we identify the formal leadership positions for FRC and mentors collaborate to determine the best fit.
 - We do not vote.
 - We do not consider gender.
 - We do not automatically reward because of class standing.
 - We reward hard work and a strong work ethic.
 - We reward skill set development.
- These are difficult decision and we do have to tell students “It’s not your year for this”.





Killer Bees 2014 Successes

5 Banners, 6 Medals, 8 Trophies, One Season!

2014 #1 Seed at Southfield District (11-1-0)

2014 Winner at Southfield District w/ 107 and 5053 (40 Teams)

2014 Southfield District Chairman's Award Winner

2014 #1 Draft at Midland District (10-2-0)

2014 Semifinalist at Midland District w/ 2137 and 5203 (40 Teams)

2014 Midland Engineering Excellence Award

2014 #2 Draft at Troy District (10-2-0)

2014 Winner at Troy District w/ 910 and 5193 (40 Teams)

2014 Troy Quality Award

2014 #3 Draft at Michigan State Championship

2014 Winner Michigan State Championship!!!! w/ 27 and 314

2014 Michigan State Chairman's Award Winner!!!!

Julia Green – 2014 Michigan State Woodie Flowers Award Nominee

2014 #1 Ranked team in Michigan (339 Ranking Points, 277 Teams)

2014 #8 Seed - Archimedes Division – World Championship (100 Teams)

2014 #3 Draft – Archimedes Division – World Championship

2014 Finalist – Archimedes Division – w/ 27, 334, and 175.

2014 #5 Ranked team in FRC – FRC top 25

2014 2nd Highest Scoring OPR at World Championship – 121.9

2014 Season Record (72-16-0) - 82%

2014 #1 Ranked Chrysler Sponsored Team

2014 #2 Ranked BAE Systems Sponsored Team

#5 Ranked Team Overall on 14 year World Championship History Ranking

Ellen Green – Winningest Driver in Killer Bees History –

7 Event Wins in 2 years!! (record = 175-46-1)





Thank You!

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