

CHS BunnyBots 2019 Rules
Flying Bunnies sponsored by AndyMark
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BunnyBots is an annual pre-season event originally designed by FRC Team 1540, the Flaming Chickens. Its purpose is to give new FRC students a chance to familiarize themselves with robot construction before the build season starts while giving veterans the opportunity to practice new skills and gain leadership experience. This game is more relaxed than FRC competitions and all in good fun.

WHO'S INVITED

All teams in the Chesapeake District are encouraged to attend this year's Bunnybots competition! Teams from outside the region are also welcome to participate.

REVISION HISTORY

This is a living document. Rule modifications or edits will be noted here. Changes from the last revision will be marked as such: omissions will be ~~struckthrough~~ and additions will be **highlighted**.

Version 1.0 - Sept 1, 2019

- Initial release

Version 1.1 - Sept 3, 2019

- Human players
- Endgame points adjustments
- Initial balls adjustments
- Extension rule adjustment
- Goal nets

Version 1.2 - Sept 14, 2019

- Human player adjustments
- Added game sponsor
- Fix scoring section

Version 1.3 - Sept 19, 2019

- Added height limit back
- Restricted bunny holding to one at a time

Version 1.4 - Oct 8, 2019

- Changed rules about bunnies

Version 1.5 - Oct 22, 2019

- Size restricted bunny ears
- Updated bunny size rules
- Banned throwing crates onto field
- Added penalties for fouls that did not have them before

Version 1.6 - Nov 16, 2019

- Fixed dimensions for vision tape

Version 1.7 - Dec 8, 2019

- Removed team number display requirement
- Adjusted flag dimension
- Added clarification to human player rules
- Removed banning of personal hotspots
- Added goals to pinning

Version 1.8 - Dec 11, 2019

Added bunny alliance identification requirement

Clarified that bunnies must be fully behind the wood of the goal to be counted

Updated pit machining rules

GAME SUMMARY

Bunnybots Chesapeake 2019, Flying Bunnies, is played on standard carpeted FRC 27' x 54' field with two alliances of 2 teams each. The field is divided into three regions: one for each alliance on their respective side and one neutral zone in the middle. In each alliance zone, there are three goals of varying heights. The neutral zone is filled with 400 fuel balls from the 2017 FRC game, FIRST Steamworks. Alliances must score balls and bunnies into their goals to score points. At the end of the game, teams must fight for control of the landing pad.

GAME DETAILS

The game is played on a 27' x 54' field covered with standard FRC carpet.

The field is divided into three main regions: the red alliance zone, the blue alliance zone, and the neutral zone. Each alliance zone has three goals: two low and one high. These goals are stationary. The goals are all against the alliance station wall. The high goal is centered on this wall and each low goal is 36" away in either direction. The goals are created as follows:

- Low goals are made of two stacked totes from the 2015 FRC game FIRST Recycle Rush (https://www.orbiscorporation.com/products/hand-held-containers/stack-n-nest/fp243#.VJH4-SvF_Lk) and topping the stack with a wooden goal. The opening of the goal is 12" tall and 22" wide. Either end of the opening is a semicircle with a diameter of 12". Nets are attached to the back of the opening of each goal to catch scored balls. Two 5" x 2" long vertical strips of retro-reflective tape are placed centered above each goal. The bottom of each strip is 2.5" above the top of the goal opening and the strips are 2" apart. The goal can be reasonably simulated by placing a third tote on its side on the stack and opening it (though this is larger than the actual goal and does not include vision targets).
- High goals are made of five stacked totes and topping the stack with the same wooden goal as the low goal. The goal can be simulated in the same way with the same limitations.

Each alliance zone contains one safe zone. The safe zone extends the full width of all three goals plus an additional 5" in either direction. It begins at the front of the goals (the side facing the center of the field) and extends 5' towards the center of the field.

The neutral zone contains the landing pad, a 5'x5' zone which lies directly in the center of the field. At the end of the game, alliances receive points based on their control of the landing pod. More details in the Endgame section.

Matches are 2:30 long with the first 15 seconds being autonomous. At the end of the match, each alliance is awarded 1 point for each fuel in a low goal and 2 points for each fuel in the high goal.

Each alliance also starts the match with two stuffed bunnies. Bunnies, when scored into a goal, double the value of that goal. If a bunny is scored into the low goal, all fuel in that goal at the end of the match are worth 2 points instead of 1. If a bunny is scored into a high goal, all fuel in that goal at the end of the match are worth 4 points instead of 2. Goals are not limited to one bunny bonus; two bunnies in one goal will quadruple its value.

Each team may also bring one human player to the field. Each alliance will be given two milk crates filled with 12 fuel each. These crates can be dumped onto the field or into robots at any point during the teleoperated or endgame phases. Each human player must choose a long side of the field at the beginning of the match and stay between their alliance wall and the neutral zone on that side during the match. Fuel must be dumped directly from the crate onto the field - no taking the fuel out with your hands or any other instrument. Crates must remain off the field at all times - no dropping or throwing the crates onto the field.

Balls are fuel from the 2017 FRC game FIRST Steamworks

(<https://www.andymark.com/products/first-steamworks-fuel-gopher-5-in-resident-ball-s-options?via=Z2lkOi8vYW5keW1hcmsvV29ya2FyZW6Ok5hdmlnYXRpb246OINiYXJkaFJlc3VsdHMvJTdCJTlyYnV0dG9uJTlyJTljb2VhcmNoJTlyJTJDJTlcyGFhZSUyMiUzQSUyMjllMjllMkMIMjJxJTlyJTljb2VhcmNoJTlyMnV0ZjllMjllM0EIMjllRTllOUIMiOTMIMjllNOQ>). Four hundred (400) fuel are placed in the neutral zone at the start of each match.

A full field CAD can be found [here](#).

BUNNIES

Bunnies are stuffed animals with bodies in the 5" - 15" range and bunny ears no larger than 5" wide by 10" tall. Teams can choose one of their liking from a supply on their side of the field during setup. Teams can also bring bunnies of their own if they so choose. Bunny bodies should be in the range of 5" - 15" exclusive of ears. Note there is no rule excluding modifying (or making your own) bunnies if you bring your own. If you make your own it must look like an animal with bunny ears to the casual observer and have a body in the 5"-15" range. Bunnies may not be made of hazardous materials, contain fluids, or be dangerous to handle with human hands (sharp edges, etc.)

Bunnies must have the ability to attach a ribbon (e.g. tying) before the match to indicate alliance color. Ribbon will be provided, and thus must be removed at the end of the match.

SETUP

Up to five fuel can be preloaded into each alliance robot if desired.

Robots must begin in their respective alliance zones.

During setup teams can not reposition balls.

Field setup can be done by team members beyond the drive team, with a maximum of five people per alliance doing setup.

On occasion the ball count may vary slightly as they escape the confines of the field or get taken away accidentally by teams. We won't recount the balls before each match, only when there is a break in play.

The bunnies (two per alliance) can start the match in contact with a robot or the carpet. Each robot may have at most one bunny contacting it at the start of a match. They must be placed in their respective alliance's alliance zone. They need not be placed at all if the alliance has no need for them.

SCORING

Each alliance's score is calculated at the end of the match.

One point is awarded for every fuel in each low goal. Two points are awarded for each fuel in the high goal. The value of a goal will be doubled for each bunny scored in it.

Balls **and bunnies** must be fully behind the wood of the goal to be counted as scored.

Autonomous and Endgame points are described in their respective sections.

AUTONOMOUS PERIOD

Robots begin the 15 second autonomous period anywhere in their alliance zone.

Robots earn 5 points for some portion of the robot crossing into the neutral zone during the autonomous period.

Robots are also free to take any other legal action during the autonomous period with the exception of crossing into the opponent's alliance zone.

Alliances earn one ranking point for scoring at least one fuel in both the high goal and at least one low goal during the autonomous period. In eliminations, this ranking point becomes a 5 point bonus.

No human interaction is allowed during autonomous. Systems assisted by humans using laptop cameras, IR remote controls, voice, Xbox Kinect, etc. are forbidden and punishable by a red card.

ENDGAME PERIOD

At the end of the game, alliances will receive points based on their control of the landing pad. The landing pad is a 5'x5' zone that lies directly in the middle of the field. Robots are scored based on their position once all robots have stopped moving entirely. Scoring is as follows:

- Bumpers breaking the plane of the landing pad but not fully in - 5 points
- Bumpers fully within the landing pad - 15 points

This is a reminder that all robot and game rules still apply. This includes but is not limited to:

- Bumper rules
- Field interaction rules (such as grabbing or adhering to the carpet)
- Incursion rules
- Intentional damage rules

ROBOT RULES

All FRC robot rules (that aren't game specific) from 2019 apply with the following modifications:

1. The first priority for this event is safety. This will be entirely up to the discretion of the inspectors at the event, so please keep this in mind when designing your robot. You can and should check potentially unsafe electronics or mechanisms with us before building.
2. In the spirit of BunnyBots, do not reuse previous years' FRC robot or BunnyBot.
3. As the goal of BunnyBots is to increase the skills of students, mentors are strongly encouraged to take an advisory role.
4. Bumpers are required. Bumper covers are not required but recommended. Bumpers must comply with FRC 2019 bumper rules. Do note that if your team opts out from bumper covers you are advised to bring additional bumper supplies in the event that they break.

5. Robots must have a frame perimeter of less than or equal to 120". They must be fully contained within their frame perimeter (whatever size it may be) at the start of a match. After the match has begun they may extend outside of their initial perimeter. Robots may not extend more than 10" beyond their frame perimeter.
6. Robots may not exceed 3' tall at any point in the match.
7. Robot designers should assume there will be small terrified bunnies laying around on the field and should take care to shield wheels, chains, and gears in drive trains so as not to mutilate them or suck them up into their innards.
8. Robots may not intentionally detach pieces of themselves.
9. The maximum weight of a robot, without its battery and bumpers, is 125 lbs.
10. Robots must have .5" to 2" ground clearance to clear field irregularities, taped seams, as well as random robot parts.
11. FIRST electrical rules WILL apply. Please stick with the FRC 2019 control system.
12. There is no restriction on the equipment used in the driver station though it must all be battery powered and quick to set up.
13. There is no cost accounting for BunnyBots.
14. There is no requirement that parts used on your BunnyBot be available off the shelf. In other words, you may use random parts you might have lying around the shop or that have been removed from other devices. The idea is for people to not spend too much money on this.
15. Bunnybots must be powered by a FRC-legal 18Ah battery. Power sources integral to other electronic devices, such as cameras and co-processors, are allowed.
16. Each robot must have a place to insert a flag that identifies their alliance color. The shaft for competition provided flags is 5/16" in diameter ~~with flag shafts about 3' high~~. Custom made flags are not permitted.
17. ~~Each robot must display its team number in 4" or higher characters of a contrasting color on at least two opposing sides; more sides are preferable. If a given FRC team has more than one BunnyBot, they should be labeled 1234 followed by a single letter. The scoring system will be expecting the single letter suffix for teams with multiple robots, so don't get creative with the numbering.~~

PENALTIES AND CARDS

1. **OUT OF BOUNDS.** A 10 point penalty is assessed for a robot that goes out of bounds (over the 4x4s). You are considered out of bounds if any portion of your robot touches the floor beyond the 4x4s. Once a robot is out of bounds, it must be disabled. Wise robot designers will make sure some portion of the robot or bumper contacts the 4x4s before its wheels do.
2. **INCURSIONS.** Intentional incursions into an opposing alliance's robot's initial frame perimeter will incur a 10 point penalty per incident. Intentional frame incursion with the obvious intent to cause harm to opposing robots will incur a red card.
3. **PINNING.** An alliance may not pin an opposing robot that is in contact with a field border, goal, or another robot for more than 5 seconds. A robot will be considered pinned until the robots have separated by at least 6 feet. The pinning robots must then wait for at least 3 seconds before attempting to pin the same robot again. Penalty: 3 points initially and 3 points for every five seconds thereafter.
4. **UNGRACIOUS BEHAVIOR** will not be tolerated. Penalties are up to the referees and can range from a warning to 10 point penalties to red cards. Aggressive game play isn't ungracious as long as it's within the spirit of the rules. Being a jerk...that's ungracious.
5. **KEEP THE FIELD IN TACT.** Robots may not modify the field in any way. This includes moving or knocking down goals. Penalty: Yellow card. If intentional or repeated, red card.
6. This BunnyBot game is a contact sport, and as such, there is no penalty for high-speed ramming. Robots should be designed robustly with this in mind.
7. Teams should keep in mind that spectators will be standing close to the field. Robots employing strategies that might harm people will be disqualified.
8. If the opposing alliance performs an action that causes a team to violate the rules, no penalty will be assessed. This is up to the referees and is judged on a case-by-case basis.
9. Electronic communication with the drive team or those in the general area is not allowed when the match is underway. Warning followed by red card.
10. Red cards zero the score for the entire alliance.
11. Teams are not allowed to control any of the opposing alliance's bunnies. Controlling can apply to intentional pushing, intaking, or other manipulation. Incidental contact

is allowed and will be judged by the refs on a case by case basis. Penalty: 10 points. If strategic, red card.

12. Robots may not break the plane between the neutral zone and the opposing alliance's alliance zone during the autonomous period. Penalty: 3 points
13. Only one robot from each alliance may have their bumpers break the plane between the neutral zone and the opposing alliance's alliance zone. Minor infractions (such as a corner breaking the plane while spinning) are excluded. When a robot breaks this rule, an initial penalty will be assigned, followed by a 5-second count to the next penalty. Penalty: 3 points initially and 3 points for every five seconds thereafter.
14. Robots whose bumpers are fully within their opponent's alliance zone must stay within their frame perimeter. When a robot breaks this rule, an initial penalty will be assigned, followed by a 5-second count to the next penalty. Penalty: 3 points initially and 3 points for every five seconds thereafter.
15. A team whose bumpers are fully within their safe zone may not be contacted by opposing robots, no matter who initiates the contact. Penalty: 3 points against the opposing robot
16. A team whose bumpers are fully within their opponents safe zone may not contact an opposing robot, no matter who initiates the contact. Penalty: 3 points
17. A robot may only ever contact one bunny at a time. Penalty: 3 points
18. A human player may not contact fuel with their hands or any instrument other than the crate. Penalty: 3 points and a warning the first time, yellow card thereafter
19. A human player may not cause a crate to enter the field in any way. Penalty: Yellow card
20. Robots may not modify the game pieces outside of reason (so compressing balls is fine, but spray painting them is not). Penalty: Red card
21. Since the field will have gates, team members must enter and exit through gates. Penalty: Yellow card

PIT RULES

1. No running in the pits.
2. Machine tools that require a ~~charger~~ wall plug (Bandsaw, Drill press, Belt and disc sander, etc.) are not allowed to be run in the pits. Hand tools that require a plug

(e.g. corded drill, dremel, etc) are allowed. ~~There will be a machine shop operating separately where you can request parts.~~ Battery chargers however, are allowed.

3. No running in the pits.
4. Teams may not extend out of their designated pit area. Human beings occupying the walkways must not disrupt the flow of traffic and robots.
5. No running in the pits.
6. No food in the pits. Yes, we will actually check.
7. No running in the pits.
8. Safety goggles must be worn at all times when in the pit area.
9. No running in the pits.

GENERAL EVENT RULES

All expectations that apply to a normal FRC district event/championship/Worlds that are not explicitly mentioned below also apply at this event.

1. Spectators and non-driveteam team members must stay out of the region marked specifically for referees.
2. The referee's call is final. We may review matches if there is a significant suspect of something causing potentially unbalanced gameplay. We will not tolerate, however, heckling with the referees after a match or similar ungracious behavior.
3. Food and drinks are allowed, but do not make a mess (please!)
4. Fighting is strictly prohibited, verbally or physically. Violation of this rule may result in both teams being forbidden from participating in the rest of the competition and/or asked to leave the event.
5. No running in the event area. Especially during dancing.
6. Have Fun!

RULE CHANGES

BunnyBots is intended as a fun way for teams to gain experience building robots before build season. The rules can't be as carefully tested as an official FIRST game.

We don't always know how the game will play until we start to play it the day of the competition. The game design committee reserves the right to tweak the rules as the fall season progresses as well as the day of the competition as we see how the matches play.

Teams that discover what they suspect is a game breaking strategy should bounce that off us (blair.robot@gmail.com) before devoting too much time to it. Those kinds of oversights on the part of the game design committee could easily be plugged on the day of the competition. The goal is to maximize the enjoyment of everyone, not reward the cleverness of one team.

RANKING POINTS AND FINAL MATCHES

After playing a match teams earn ranking points as follows:

Winning Alliance Ranking Points = 2

Loser Ranking Points = 0

Tie Ranking Points = 1

Auto Ranking Points = 1

A team's rank is determined by their ranking score, which is their average ranking points per match. In the event of a tie in ranking score, the tiebreakers are as follows (in priority order): win-loss record, alliance bunnies scored, and cumulative alliance match score. If two teams in the top eight are tied in all three tiebreaker categories as well as in ranking score at the end of qualifications, each team will send a representative to the scoring table to face off in a best of 3 rock-paper-scissors showdown. The winner will receive the higher seed.

At the end of qualification rounds, the 8* teams with the highest ranking score will become alliance captains. Alliance captains may not pick other alliance captains. Starting with the top ranked team, each captain will choose one partner from the remaining teams.

The eight alliances will play in a standard bracket, where seed one plays seed eight, two plays seven, four plays five, and three plays six in the first round. Each round will be a best of three, just like in FRC.

*This is subject to change based on how many teams are signed up.