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The Game

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Section 2 – The Game

2.1 – Overview

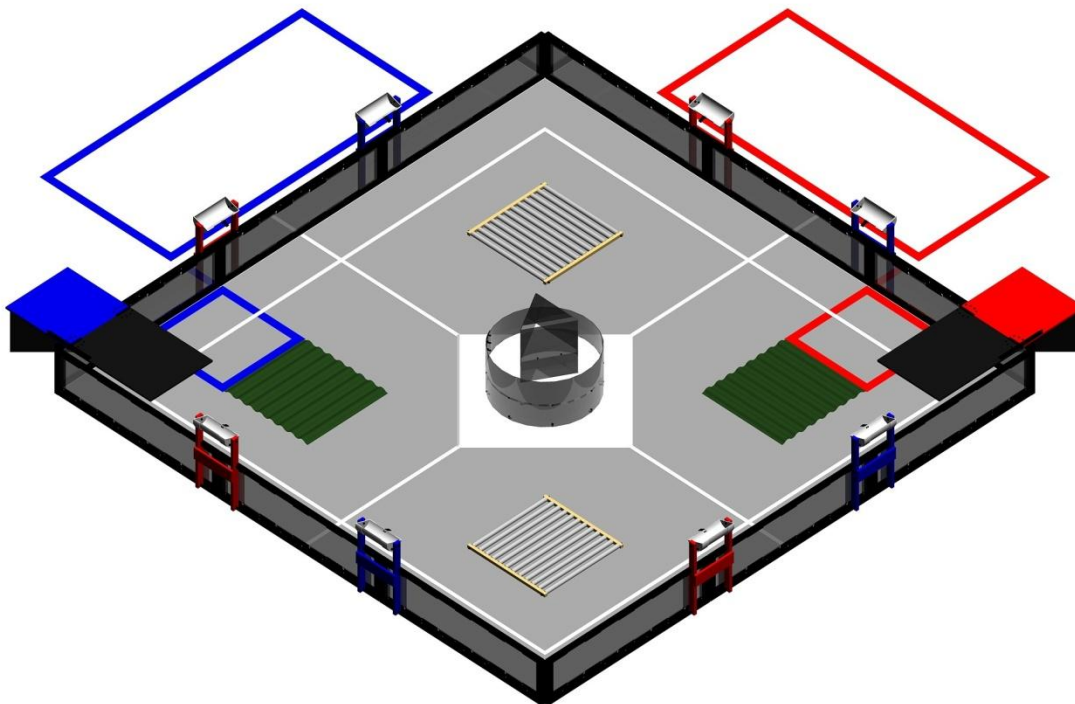
This section describes the *FIRST* Tech Challenge game for the 2008 season, called *FIRST Face Off!*. It also lists the game definitions and game rules.

2.2 – Game Description

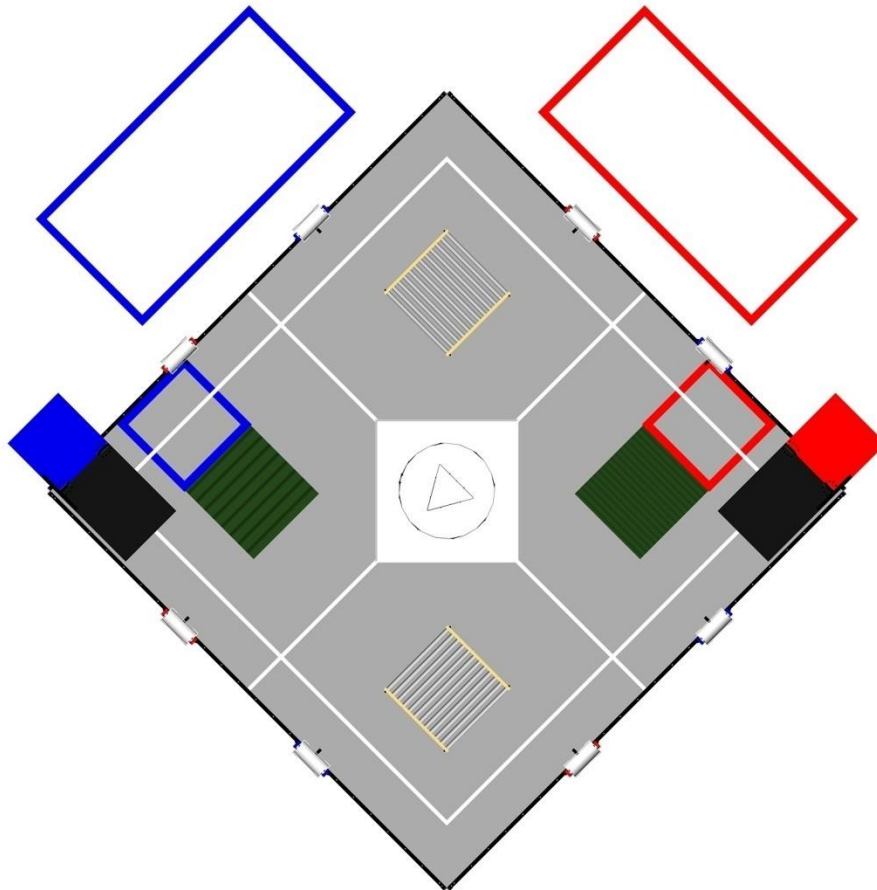
Matches are played on a field initially set up as illustrated in the figures below. Two *alliances* – one “red” and one “blue” – composed of two teams each, compete in each *match*. The object of the game is to attain a higher score than your opposing *alliance* by removing colored hockey *pucks* from 8 different *racks* around the field and placing them in various locations in the *center scoring area*. Teams will be also be challenged by traversing over rough and/or slippery terrain located in 4 different areas of the field and will have to navigate onto the field at the start of a match and back off the field at the end of the match.

In the *Autonomous Period*, pucks scored in the center scoring area will be totaled and each alliance will keep those points whether the pucks are descored (pucks will count once) or not (pucks will be scored a second time).. There will also be bonus points awarded to alliances for knocking pucks down from their racks based on their location from the *Starting Location*.

There are a total of 70 *pucks* (35 red & 35 blue) available as scoring objects in the game.



Note: The illustrations in this section of the manual are only provided to give a general visual understanding of the game. Teams should refer to the official field drawings available at www.usfirst.org under FTC Team Resources for exact field dimensions, a full field BOM and the exact details for field construction. Items listed in the full field BOM are recommended for an official Field Kit. Suitable substitutions are acceptable. Lower cost field options are also provided at www.usfirst.org



2.3 – Game Definitions

Alliance – A pre-assigned grouping of two teams that work together for a given *match*.

Alliance Station – The designated region where the *drivers* and *coach* stand during any *match*.

Autonomous Period – A 30-second period in which the *robots* operate and react only to sensor inputs and to commands pre-programmed by the team into the onboard *robot* control system. Human control of the *robot* is not permitted during this time.

Center Scoring Area – The Center Scoring Area is considered to be part of the field (see *Off the Field*). The Center Scoring Area is composed of three concentric scoring locations:

Outer Square – A 36-inch square platform resting $\frac{3}{4}$ inch off of the playing field with chamfered edges.

Middle Circle – A 24-inch diameter cylinder that rests on top of the Outer Square with 12-inch cylindrical walls.

Center Triangle – A triangular-shaped object that measures 20-inches tall with 12-inch sides.

Coach - A student or adult mentor designated as the team advisor during the match and identified as the person wearing a “*coach*” badge.

Driver - A pre-college student team member responsible for operating and controlling the *robot* and wearing a “*Driver*” badge or identifying marker.

Driver Controlled Period – The two-minute time period in which the *drivers* operate the *robots*.

Far Rack – The puck-holding *rack* for each alliance, furthest from the robot's starting location. For the Red Alliance, it is on the opposite wall from the Red *Alliance Station* and directly in front of the Blue Alliance's starting location. For the Blue Alliance, it is on the opposite wall from the Blue *Alliance Station* and directly in front of the Red Alliance's starting location.

Field – The part of the playing surface that is composed of the SoftTiles (mat), the 4 rough or slippery terrain areas, and the *Scoring Area*. For the 2008 game, the definition of the field does NOT include the walls.

Match - A *match* consists of an *autonomous period* followed by a *driver-controlled period* for a total time of 2:30.

Near Rack – The six other *racks* (3 red and 3 blue) that are not the *Far Rack*.

Off the Field – A robot is considered “off the field” if there are no parts of it that are touching the *field*. The field walls, starting *platform* outside the field, and the ramp can be considered “off the field”. The *Scoring Area* is considered to be on the field.

On-Field Starting Position – Two (2) tiles, one red and one blue, that are the starting location for one robot of the alliance corresponding to the color of the tile (or tape surrounding the tile). Robots must be fully within the tile and may not break the vertical plane formed by extending the tile edges infinitely above the tile's outer edge of the tape.

Platform – The starting location of one of each alliance's robots that sits outside the field. The platform measures 18-inches by 18-inches and rests 12-inches off of the floor. Also known as the *Off Field Starting Location*. The platform does NOT include the ramp.

Puck – A scoring element for the 2008 FIRST Tech Challenge game, FIRST Face Off!. The puck is a Mylec or Franklin floor or street hockey puck that is made of molded plastic and measures 1-inch thick and 3-inches in diameter. It weighs approximately 2 ounces. Each puck will be painted red or blue. Depending on the tournament, there may be other markings on the puck faces for sponsors logos or other decorations.

Rack – One of eight locations that hold *pucks* prior to the start of a *match*.

Robot – Anything (which has passed inspection) a team places in their corresponding *Starting Locations* prior to the start of a *match*.

Scored – A *puck* is scored if the entire puck is in the space extending infinitely above any one of the three scoring zones in the *Center Scoring Area*, and is not touching a robot of the same alliance color.

Starting Location – The location where teams place their robots before the start of the match. There are two starting locations per alliance.

On Field Starting Location – An approximately 24-inch x 24-inch location on the field located in front of the corresponding alliance station. The robot may start in any orientation anywhere within the taped boundary that is no larger than 24-inch x 24-inch.

Off Field Starting Location – Also known as the *Platform*. The *platform* measures 18-inches by 18-inches and rests 12-inches off of the floor. Attached to the *Platform* is an 18-inch x 24-inch ramp that initially starts in a raised position. The robot is required to push the ramp down and drive off the platform in order to score pucks on the field.

2.4 – Game Rules

2.4.1 – Scoring

- A *puck* that is scored in the *outer square* of the *center scoring area* is worth one (1) point for the corresponding *alliance*.
- A *puck* that is scored in the *middle circle* of the *center scoring area* is worth three (3) points for the corresponding *alliance*.
- A *puck* that is scored in the *inner triangle* of the *center scoring area* is worth five (5) points for the corresponding *alliance*.
- A *robot* that is *off the field* at the end of a *match* is worth ten (10) points for the corresponding *alliance*.

2.4.2 – Scoring in Autonomous Mode

- Any *pucks* that are scored during the *autonomous period* will be counted at the end of the autonomous period. If those pucks stay in the *Center Scoring Area* throughout the rest of the match, the pucks will be scored a second time.
- If a *robot* successfully clears the *pucks* off a *near rack* during the *autonomous period*, the corresponding *alliance* (based on color of the pucks) will score 5 points for each *near rack* cleared. If the *far rack* is successfully cleared, the alliance corresponding to the color of the rack will score 10 points.

2.4.3 – Safety Rules

<S1> If at any time the *robot* operation is deemed unsafe or has damaged the playing field, surface, or barriers, by the determination of the referees, the offending team may be disqualified. The *robot* will require re-inspection before it may again take the field.

<S2> If a *robot* goes completely out-of-bounds (outside the playing field), it will be disabled for the remainder of the *match*. But it will be eligible for the 10 points described in 2.4.1.

Note: The intent is NOT to penalize *robots* for having mechanisms that inadvertently cross the field border during normal game play.

2.4.4 - General Game Rules

<G1> At the beginning of a *match*, each *robot* must not exceed a volume of 18" wide by 18" long by 18" tall. An offending *robot* will be removed from the *match* at the Head Referee's discretion.

- a. Alignment devices (templates, tape measures, lasers, etc.) that are not part of the *robot* may NOT be used to assist with the positioning of the *robot*.

<G2> Each team shall include up to two *drivers* and one *coach*.

<G3> During a *match*, the *drivers* and *coach* must remain in their *alliance station* and can not make any contact with the *field*.

<G4> *Pucks* that leave the playing field are considered out of play. These *pucks* will not be returned to the field during a *match*.

<G5> *Drivers* and *coaches* are prohibited from making intentional contact with any game or field object. The first instance of intentional contact will result in a warning, with any following instances resulting in a disqualification.

<G6> During a *match*, *robots* may be remotely operated only by the *drivers* and/or by software running in the on-board control system. If a *coach* touches his/her team's controls anytime during a *match*, the *robot* will be disabled and the team disqualified.

<G7> Scores will be calculated for all *matches* when all objects on the field have come to rest.

<G8> *Robots* may not intentionally detach parts during any *match*, or leave mechanisms on the field. If a detached component or mechanism is attached to the *center scoring area* and prevents additional scoring of *pucks*, the team will be disqualified. Multiple infractions may result in disqualification for the entire competition.

<G9> Strategies and mechanisms aimed solely at the destruction, damage, tipping over, or entanglement of *robots* or *scoring areas* are not in the spirit of the *FIRST Tech Challenge* and are not allowed. However, *FIRST Face Off!* is a highly interactive contact game. Some tipping, entanglement, and damage may occur as a part of normal game play. If the tipping, entanglement, or damage is ruled to be intentional, the offending team may be disqualified from that *match*. Repeated offenses could result in a team being disqualified from the remainder of the competition.

<G10> *Robots* must be designed to permit easy removal of *pucks* from any grasping mechanism without requiring that the *robot* have power after the *match*.

<G11> Field tolerances may vary by as much as +/-1" and *puck* tolerances may vary as much as +/- 1/8" and +/- 0.5 ounces. Teams must design their *robots* accordingly.

2.4.5 – FIRST Face Off! Specific Game Rules

<SG1> At the beginning of each *match*, one *alliance robot* must be placed inside the field in the *on field starting location*. The other alliance robot must be placed in the *off field starting location*. The robot must successfully navigate off the platform and onto the field during the match in order to score pucks. If the robot cannot get onto the field, it will be eligible for 10 points as described in 2.4.1.

- During the qualification matches, the red *alliance robots* must be placed on the field first.
- During the elimination matches, the lower seeded *alliance robots* must be placed on the field first.

<SG2> Prior to the start of each *match*, each *alliance* will have three (3) *pucks* available to preload into their *robots*.

- a. A *puck* is considered to be legally preloaded if it is touching the *robot* and not touching any part of the playing field, field wall, ramp, or game objects.
- b. No *robot* may preload more than two (2) *pucks*.

<SG3> *Pucks* set in the *racks* before the beginning of the *match* are placed in a set pattern. Teams are not allowed to touch or reposition the *pucks* in any way prior to the start of a *match*. Repeated violation of this rule may result in team disqualification.

<SG4> In the event a single *puck* meets the definition of *scored* in more than one *goal* at the conclusion of either period, that *puck* will count only once for the highest point value possible. No single *puck* can ever earn an *alliance* more than five points at the conclusion of a *match*.

<SG5> Removing (de-scoring) *pucks* from the *center scoring area* will be allowed.

<SG6> A *robot* cannot pin (inhibit the movement of an opposing *robot* while in contact with one or more field elements) an opposing *robot* for more than five seconds. If a referee determines this rule to be violated, the offending *robot* will be disabled for the match.

