APPENDIX C

The Programming Skills Challenge

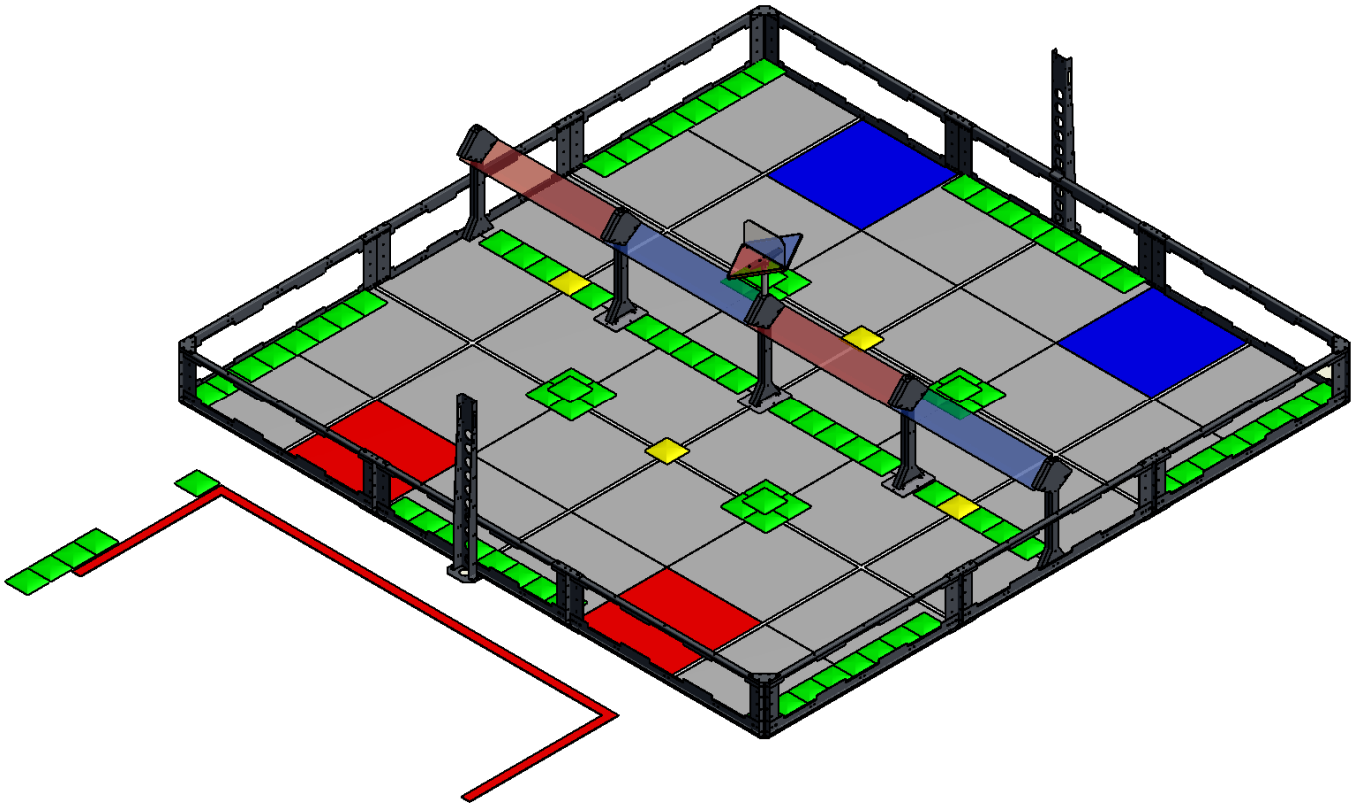
Overview

This section describes the Programming Skills Challenge of *VEX Sack Attack.*

Please note that the Programming Skills Challenge may not be offered at all tournaments. Please check with your local event organizer, or www.robotevents.com for more information.

Programming Skills Challenge Description

In this challenge teams will compete in sixty (60) second long matches in an effort to score as many points as possible. These matches will be autonomous with exceptions for minor human interaction. The playing field will be set up identically to that of a normal VEX Sack Attack tournament match.



Note: The Robot Skills Challenge and the Programming Skills Challenge use the same field setup!
(Please see "The Game" section of the manual for further information on field setup)

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Programming Skills Challenge Definitions

Please note that all definitions from "The Game" section of the manual apply to the Programming Skills Challenge, unless otherwise specified.

Programming Skills Match – A *Programming Skills Match* consists of a sixty (60) second *Autonomous Period*. There is no *Driver Controlled Period*.

Programming Skills Match Loads – The five (5) *Sacks* available to be loaded at any time during a *Programming Skills Match.* Of these *Programming Skills Match Loads*, only one (1) *Sack* may be used as a *Programming Skills Preload*.

Programming Skills Preload – The one (1) *Sack* each team may load into their *Robot* prior to each *Programming Skills Match*. An unused *Programming Skills Preload* becomes a *Programming Skills Match Load*.

Programming Skills Parked – A robot is considered to be *Programming Skills Parked* if it is touching one of its own *Alliance Starting Tiles* at the end of the *Match*, and has left the *Alliance Starting Tile* during the *Programming Skills Match*.

Programming Skills Challenge Rules

Please note that all rules from "The Game" section of the manual apply to the Programming Skills Challenge, unless otherwise specified.

<PSC1> At the beginning of each *Programming Skills Match*, the *Robot* must be placed such that it is touching any of the colored *Alliance Starting Tiles* and not touching any *Scoring Objects* other than those permitted by <PSC2>.

<PSC2> Prior to the start of each *Programming Skills Match*, each team will have one (1) *Sack* available as a *Programming Skills Preload*. A *Scoring Object* is considered to be legally preloaded if it is touching the *Robot* and not touching any *Field Element*.

<PSC3> *Programming Skills Match Loads* may be introduced on any *Alliance Starting Tile*.

<PSC4> In a *Programming Skills Match,* all *Goals* are considered to be the same color for purposes of any rules or definitions.

a) *Robots* will only earn points for being *Programming Skills Parked* on an *Alliance Starting Tile* of the same color as the one they started on.

<PSC5> *Drivers* and *Coaches* may interact with their robots as specified in <SG4> of Section 2 – The Game, with the following additional restrictions:

- **i.** *Drivers* and *Coaches* may only interact with a *Robot* if it is touching an *Alliance Starting Tile* of the same color as the one they started on and no part of the *Robot* is touching a gray foam tile, except the interaction allowed in <PSC5ii>
- **ii.** If any part of a *Robot* is touching a grey foam tile, the only interaction that will be allowed is to bring the *Robot* fully into the legal *Alliance Starting Tile*, into a legal position as per <PSC5i>
- **iii.** After any legal interaction with the robot by *Drivers* and *Coaches,* and prior to the robot attempting to score or interact with Game Objects, the robot must be in a position such that it is touching a legal *Alliance Starting Tile* and no part of the *Robot* is touching a gray foam tile; a legal position as per <PSC5i>. i.e. Before the *Robot* leaves the *Alliance Starting Tile*, *Drivers* and *Coaches* may not be touching the robot. If *Drivers* and *Coaches* touch the *Robot* again, it must be touching a legal *Alliance Starting Tile* and it must immediately be brought fully back onto the tile.
  Note: *Robots* that hang over the edge of the *Alliance Starting Tile*, but do not touch any gray foam tiles, are considered to be in legal positions for interaction as per <PSC5>

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Programming Skills Challenge Scoring

All scoring is the same as in a regular *VEX Sack Attack* match.

- A *Sack Scored* in a *Floor Goal* is worth one (1) point.
- A *Sack Scored* in a *Trough* is worth five (5) points.
- A *Sack Scored* in a *High Goal* is worth ten (10) points.
- A *Bonus Sack Scored* in a *Floor Goal* is worth six (6) points.
- A *Bonus Sack Scored* in a *Trough* is worth ten (10) points.
- A *Bonus Sack Scored* in a *High Goal* is worth fifteen (15) points.
- *Robot* that is *Programming Skills Parked* at the end of the match receives ten (10) points

Programming Skills Challenge Format

- The Programming Skills Challenge is an optional event. Teams who do not compete will not be penalized in either the main tournament, or the Robot Skills Challenge.
- Teams will play *Programming Skills Matches* on a "first come, first serve" basis.
- Teams will be guaranteed a minimum number of *Programming Skills Matches*, to be determined by the event organizers
- Teams may also be limited to a maximum number of *Programming Skills Matches*, to be determined by the event organizers

Programming Skills Challenge Rankings

For each *Programming Skills Match* teams are awarded a score based on the above scoring rules.

- Teams will be ranked based on their highest *Programming Skills Match* score, with the team with the highest score being declared the Programming Skills Challenge Winner.
- In the case where two teams are tied for the highest score, the tie will be broken by looking at both teams' next highest *Programming Skills Match* score.
- If the tie cannot be broken (i.e. both teams have the exact same scores for each *Programming Skills Match*), the next tie-breakers will be based on the following criteria in each team's highest scoring *Programming Skills Match*. The tie-breakers are as follows (in order):
  - Number of *Bonus Sack* points
  - Number of points *Scored* in the *High Goal*
  - Number of points *Scored* in the *Trough*
  - Number of *Parking* points earned
- If the tie still isn't broken, events may choose to allow teams to have one more deciding match or both teams will be declared the winner.

Programming Skills Challenge Heads-Up Match

The following method will be used to determine the Programming Skills Challenge Winner at certain events, including the 2013 VEX Robotics World Championship.

- The top two teams from the Programming Skills Challenge Rankings will advance to a final heads-up match.
- Each team will perform one (1) *Programming Skills Match*, with the 2nd place team performing first or with both teams performing simultaneously on separate fields.
- This *Programming Skills Match* will be a final opportunity for both teams to beat the high score posted in earlier rounds, if neither team beats or matches the previous high score, the holder of the previous high score will be declared the Programming Skills Challenge Winner.
- If one or both teams beat the previous high score, the team with the highest score in the "Heads-Up Match" will be declared the Programming Skills Challenge Winner
- In the case of a tie for highest overall score, the tie will be broken by looking at the second highest score for both teams. (This process of looking at the next highest score will continue until the tie is broken, or all matches have been exhausted)
- If the tie cannot be broken, two winners may be declared, or a new match may be played.

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