**Section 2 – The Game**

**Overview**
This section describes the VEX Robotics Competition game, called *VEX Robotics Competition Starstruck*. It also lists the game definitions and game rules.

**Game Description**
Matches are played on a field 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 the opposing *Alliance* by *Scoring* your *Stars* and *Cubes* in your *Zones* and by *Hanging* Robots on your *Hanging Bar*.

A bonus is awarded to the *Alliance* that has the most total points at the end of the *Autonomous Period*.

![Isometric view of the field](image)

*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 specs available in Appendix A for exact field dimensions, a full field BOM, exact details of field construction, and lower cost field options.*

There are a total of twenty-eight (28) *Scoring Objects*, twenty-four (24) *Stars* and four (4) *Cubes*, in a *VEX Robotics Competition Starstruck Match*. Each *Robot* will have one (1) *Star* available as a *Preload* prior to the *Match*. Each *Alliance* will have one (1) *Cube* available as a *Driver Control Load* during the last thirty (0:30) seconds of the *Match*. Twenty (20) *Stars* and two (2) *Cubes* will start at designated locations on the field. Each *Alliance* has one (1) *Hanging Bar* from which one (1) Robot can *Hang* from.
Figures 2 & 3: Annotated views of the field
**Game Definitions**

**Adult** – Anyone not meeting the definition of **Student**.

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

**Alliance Starting Tile** – A colored tile (red or blue), that designates the location where **Robots** must start the match.

**Alliance Station** – The designated region where the **Drive Team Members** must remain during their **Match**.

**Autonomous Period** – A 15-second (0:15) time period at the start of the match when the **Robots** operate and react only to sensor inputs and to commands pre-programmed by the team into the onboard **Robot** control system.

**Cube** – An orange cube shaped cloth Scoring Object filled with pillow type filling, with a side length of 12.5” ± 1”. Each **Cube** weighs 1.68 lbs ±15%

**Disablement** – A penalty applied to a team for a rules violation. A team that is **Disabled** in a **Match**, is no longer allowed to operate its robot, and will be asked to place its controller on the ground.

**Disqualification** – A penalty applied to a team for a rules violation. A team that is **Disqualified** in a **Qualifying Match** receives zero (0) **WP** and **SP**. When a team is **Disqualified** in an **Elimination Match** the entire **Alliance** is **Disqualified** and they receive a loss for the **Match**. At the head referee’s discretion, repeated violations and **Disqualifications** for a single team may lead to its **Disqualification** for the entire tournament. Please see Section 3 – The Tournament for further details and associated definitions.

**Drive Team Member** – Any of the three (3) people allowed in the **Alliance Station** during a **Match** for each team. Only **Student Drive Team Members** are allowed to touch the controls at any time during the Match, interact with the **Robot** as per <SG3>, and interact with **Scoring Objects** as per <SG4>. Teams are allowed one (1) **Adult** as a **Drive Team Member**, but this **Adult** is not allowed to touch the controls, interact with the **Robot** as per <SG3>, or to interact with **Scoring Objects** as per <SG4>.

**Driver Control Loads** – The two (2) **Cubes**, one (1) for each **Alliance**, that **Student Drive Team Members** of each **Alliance** may load onto their **Alliance Station Alliance Starting Tile** or into a **Robot** touching the **Alliance Station Alliance Starting Tile**. The **Driver Control Load** must be entered into the field with between thirty seconds (0:30) and zero seconds (0:00) remaining in the **Match**.

**Driver Controlled Period** – The one minute and forty-five second (1:45) time period when the **Student Drive Team Members** operate the **Robots**.
**Entanglement** – A Robot is considered to have **Entangled** an opposing Robot if it has grabbed or hooked the opponent Robot.

**Far Zone** – One of two (2) areas, one (1) for each alliance, in which teams can **Score Scoring Objects**. The **Far Zones** are defined by the inner edges of the playing field walls and the designated tape lines on the foam field tiles. The **Alliance’s Far Zone** is across the **Fence** from their **Alliance Station**. Note: The **Hanging Bars** are not part of either **Far Zone**.

**Fence** – The 24” high PVC foam extrusion structure which divides the playing field in two halves. It also marks the boundary between the two **Near Zones**.

**Field Element** – The foam field tiles, field perimeter, **Fence**, and all supporting structures.

**Hanging Bar** – The red or blue 30” high, vertical PVC pipe, located in the two audience side corners of the field.

**High Hanging** – A Robot is considered to be **High Hanging** if it is touching the **Hanging Bar** of its own color and completely above the plane parallel to the foam field tiles, formed by the top of the field perimeter. Note: A **High Hanging Robot** does not also count as a **Low Hanging Robot**. Only one (1) **Alliance Robot** can earn points for **Hanging** (High or Low) during a Match.

**Low Hanging** – A Robot is considered to be **Low Hanging** if it is touching the **Hanging Bar** of its own color and not touching any foam field tiles. Note: Only one (1) **Alliance Robot** can earn points for **Hanging** (High or Low) during a Match.

**Match** – A Match consists of an **Autonomous Period** followed by a **Driver Controlled Period** for a total time of two minutes, (2:00).

**Near Zone** – One of two (2) areas one (1) for each alliance, in which teams can **Score Scoring Objects**. The **Near Zones** are defined by the inner edges of the playing field walls, and the designated tape lines on the foam field tiles. The **Alliance’s Near Zone** is across the **Fence** from their **Alliance Station**. Note: The **Fence** is not part of either **Near Zone**.

**Preload** – The four (4) **Stars**, one (1) for each team, that must be placed on the field such they are touching its **Robot**, not touching any grey foam tiles, and fully within the field perimeter prior to each **Match**.

**Robot** – Anything that has passed inspection that a team places on the field prior to the start of a **Match**.
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**Scored** – A Scoring Object is Scored in a Zone if it meets one of the following criteria:

1. The Scoring Object is touching the Zone  
   a. If a Scoring Object is touching multiple Zones it is Scored in the higher point value Zone
2. The Scoring Object is not touching any Zone and is Supported by a Robot and/or a Scoring Object, it is Scored in the Zone that Robot or Scoring Object is touching.  
   a. If the Robot and/or Supporting Scoring Object in this situation is touching multiple Zones, the Supported Scoring Object is Scored in the highest point value Zone

Note 1: If a Scoring Object is solely Supported by the Fence it is not Scored in any Zones.  
Note 2: If a Scoring Object is Supported by two opposing Robots it is not Scored in any Zones.  
Note 3: If a Scoring Object is touching two opposing Zones it is not Scored in any Zone.

**Scoring Object** – A Star or a Cube

**Star** – A green foam Scoring Object consisting six (6) points extending from a common center, with an overall diameter of 14”. Each Star weighs 0.60 lbs ±15%.

**Student** – Anyone enrolled in a pre-college school or home-schooled as part of a pre-college educational curriculum and is born after April 22nd, 1998. Eligibility may also be granted based on a disability that has delayed education by at least one year.

**Supported** – A Scoring Object is considered to be Supported if it would no longer occupy the same position if the “supporting” object were to disappear. Referees will check to see if Scoring Objects are Supported by gently pulling away the supporting object if possible.

**Zone** – A Near or Far Zone.

**Game Rules**

**Scoring**

- A Star Scored in the Near Zone is worth one (1) point for the Alliance of the color of the Near Zone.
- A Star Scored in the Far Zone is worth two (2) points for the Alliance of the color of the Far Zone.
- A Cube Scored in the Near Zone is worth two (2) points for the Alliance of the color of the Near Zone.
- A Cube Scored in the Far Zone is worth four (4) points for the Alliance of the color of the Far Zone.
- A Robot that is Low Hanging is worth four (4) points for its Alliance.
- A Robot that is High Hanging is worth twelve (12) points for its Alliance.
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- At the end of the Autonomous Period the Alliance with the most points receives a four (4) point bonus.

Safety Rules

<S1> If at any time the Robot operation or team actions are deemed unsafe or have damaged the Field Elements or Scoring Objects, by the determination of the referees, the offending team may be Disabled and/or Disqualified. The Robot will require re-inspection before it may again take the field.

  a. Teams should be extra cautious when interacting with Scoring Objects. Damage such as large scuffs and/or punctures can be ruled as a violation of <S1>.

<S2> If a Robot goes completely out-of-bounds (outside the playing field), it will be Disabled for the remainder of the Match.

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

General Game Rules

<G1> When reading and applying the various rules in this document, please remember that common sense always applies in the VEX Robotics Competition.

<G2> At the beginning of a Match, each Robot must be smaller than a volume of 18 inches wide by 18 inches long by 18 inches tall. An offending Robot will be removed from the match at the Head Referee’s discretion.

<G3> Each team shall include up to three Drive Team Members. No Drive Team Member may fulfill this role for more than one team at any given event.

<G4> Only Student Drive Team Members may touch the team’s controls, Robot, and Scoring Objects at any time during a Match, and are the only Drive Team Members allowed to interact with the Robot as per <SG3>. Adult Drive Team Members are not permitted to touch the controls or interact with the robot or Scoring Objects. Minor violations of this rule that do not affect the match will result in a warning. Egregious (match affecting) offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the head referee’s discretion.

<G5> During a Match, the Drive Team Members must remain in their Alliance Station.

<G6> During the qualification rounds, the red Alliance has the right to place its Robots on the field last. During the elimination rounds, the higher seeded Alliance has the right to place its Robots on the field last. Once a team has placed its Robot on the field, its position cannot be readjusted prior to the match. Robots must be placed on the field promptly. A Team that violates this rule will have its robots randomly repositioned by the referees.
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<G7> Drive Team Members are prohibited from making intentional contact with any Scoring Object, Field Element or Robot during a Match, with the exception of the contact specified in <SG3> and <SG4>. Minor violations of this rule that do not affect the match will result in a warning. Egregious (match affecting) offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the head referee’s discretion.

a. Drive Team Members are not permitted to break the plane of field perimeter at any time during the match, with the exception of the actions described in <SG5> and <SG6>.

<G8> During a Match, Robots may be operated only by the Student Drive Team Members and/or by software running in the on-board control system. During the Autonomous Period Drive Team Members are not permitted to interact with the Robot, the controls on their VEXnet Joysticks, or to unplug from the field, in any way, directly, or indirectly. (e.g. Triggering sensors without touching the Robot is still illegal) Minor violations of this rule that do not affect the match will result in a warning. Egregious (match affecting) offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the head referee’s discretion.

<G9> It is expected that Scoring Objects may unintentionally leave the field during match play. Scoring Objects that leave the playing field will be returned to Zone from which they exited from (e.g. The Zone where the Robot was that launched it or last contacted it on its way out of the field). Teams may not intentionally remove Scoring Objects from the field. We do expect Scoring Objects to leave the field accidently during Scoring, however doing so intentionally or repeatedly would be a violation of this rule. Minor violations of this rule that do not affect the match will result in a warning. Egregious (match affecting) offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the head referee’s discretion.

<G10> Scores will be calculated for all Matches immediately after the Match after all objects and Robots on the field come to rest.

<G11> Robots may not intentionally detach parts during any Match, or leave mechanisms on the field. Minor violations of this rule that do not affect the match will result in a warning. Egregious (match affecting) offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the head referee’s discretion. Multiple intentional infractions may result in Disqualification for the entire competition.
Strategies aimed solely at the destruction, damage, tipping over, or Entanglement of Robots are not part of the ethos of the VEX Robotics Competition and are not allowed. However, VEX Starstruck is an interactive game. Some incidental tipping, Entanglement, and damage may occur as a part of normal game play. If the tipping, Entanglement, or damage is ruled to be intentional or egregious, the offending team may be disqualified from that Match. Repeated offenses could result in a team being Disqualified from the remainder of the competition.

VEX Robotics Competition Starstruck is intended to be an offensive game. Teams that partake in solely defensive strategies will undergo extra scrutiny in regard to <G12>. In the case where referees are forced to make a judgment call on interaction between a defensive and offensive Robot, the referees will err on the side of the offensive Robot.

A team is responsible for the actions of its Robot at all times, including the Autonomous Period. This goes for teams that are driving recklessly and potentially causing damage, but also goes for teams that drive around with a small wheel base. A team should design its Robot such that it is not easily tipped over or damaged by minor contact.

Robots must be designed to permit easy removal of Scoring Objects from any mechanism without requiring the Robot to have power after a Match.

Field tolerances may vary by as much as ±1", except where otherwise noted, so teams must design Robots accordingly. Please make sure to check Appendix A for more specific tolerances.

Replays are at the discretion of the event partner and head referee, and will only be issued in the most extreme circumstances.

All teams must adhere to all VEX Robotics Competition Rules as they are written, and must abide by the stated intent of the rules. Every team has the opportunity to ask for official rules interpretations in the VEX Robotics Competition Question & Answer Forum. All responses in this Q&A forum should be treated as official rulings from the VEX Robotics Competition Game Design Committee, and they represent the correct and official interpretation of the VEX Robotics Competition Rules.

There may also be periodic “Team Updates” posted on the VEX Robotics Competition Nothing But Net webpage in the competition section of www.vexrobotics.com and www.roboticseducation.org. These updates are also “official” parts of the VEX Robotics Competition Starstruck rules.

The VEX Robotics Competition Question & Answer Forum can be found at www.vexforum.com, or directly at http://www.vexrobotics.com/Starstruck.
All teams are expected to conduct themselves in a respectful and professional manner while competing in VEX Robotics Competition events. If a team or any of its members (students or any adults associated with the team) are disrespectful or uncivil to event staff, volunteers or fellow competitors, they may be Disqualified from a current or upcoming Match. It is important to remember that we are all judged based on how we deal with adversity. It is important that we all exhibit maturity and class when dealing with any difficult situations that may present themselves in both the VEX Robotics Competition and our lives in general.

All rules in this manual are subject to changes, and not considered official until June 15th, 2016. We do not expect any major changes to take place, however we do reserve the right to make game changes until June 15th, 2016. There will also be scheduled manual updates on August 17th, 2016 and April 3rd, 2017.

VEX Nothing But Net Specific Game Rules

At the beginning of each Match, each Robot must be placed such that it is touching one of its colored Alliance Starting Tiles, not touching any Scoring Object other than those permitted by and not touching any other foam field tiles, or another Robot. No more than one (1) Robot may start the Match on any one (1) Alliance Starting Tile.

_Figures 4 & 5: A legal and illegal starting position_
Prior to the start of each Match, each Robot must use its one (1) Star available as a Preload. A Star is considered to be legally preloaded if it is touching the Robot, not touching any other grey foam tiles, and is fully within the field perimeter. (See figures 8 & 9) If a Robot is not present for their Match, their Star will be placed randomly on their Alliance Starting Tile.

Figures 6 & 7: A legal and illegal Preload

During the Driver Controlled Period, Student Drive Team Members may handle their own Robot if no part of the robot has moved at all during the Match. The type of fixes that are allowed are limited to the following:

a. Turning the Robot on or off
b. Plugging in a battery and/or power expander
c. Plugging in a VEXnet Key
d. Turning the power expander on or off

Minor violations of this rule that do not affect the Match will result in a warning. Egregious (match affecting) offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the head referee's discretion.
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<SG4> Each Alliance must introduce its Driver Control Load during the Match. The Driver Control Load must be entered into the field with between thirty seconds (0:30) and zero seconds (0:00) remaining in the Match. Driver Control Loads must be either gently placed on a Robot of your own color touching the Alliance Station Alliance Starting Tile or gently entered into the Alliance Station Alliance Starting Tile, by a Student Drive Team Member. The intent of this rule is to allow teams to introduce Cubes into play, but not to impart energy on the Cubes which will cause it to end up in a position outside the Alliance Starting Tile. It is expected that teams may momentarily break the plane of the field while legally introducing Driver Control Loads. Teams should be very mindful of <S1> during this process.

If an alliance does not legally introduce a Driver Control Load into play, it automatically counts as being scored in their opponents Far Zone.

Figures 10-13: A legal and illegal Driver Control Loads
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<SG5> *Drive Team Members* are not allowed to compress or crush *Driver Control Loads* or *Preloads*.

<SG6> *Robots* may not make contact with the foam tiles in their own *Zones*. (i.e. *Robots* may not contact the *Zones* across the fence from their *Alliance Station*) Minor violations of this rule that do not affect the match will result in a warning. Egregious (match affecting) offenses will result in a *Disqualification*. Teams that receive multiple warnings may also receive a *Disqualification* at the head referee’s discretion.

<SG7> Intentional strategies causing an opponent to violate a rule are not permitted, and will not result in a foul on the opposing alliance. Minor violations of this rule that do not affect the match will result in a warning. Egregious (match affecting) offenses will result in a *Disqualification*. Teams that receive multiple warnings may also receive a *Disqualification* at the head referee’s discretion.

<SG8> *Robots* may not intentionally grasp, grapple or attach to any *Field Elements*. Strategies with mechanisms that react against multiple sides of a field element in an effort to latch onto said field element are prohibited. The intent of this rule is to prevent teams from both unintentionally damaging the field, and from anchoring themselves to the field. Minor violations of this rule that do not affect the match will result in a warning. Egregious (match affecting) offenses will result in a *Disqualification*. Teams that receive multiple warnings may also receive a *Disqualification* at the head referee’s discretion.

<SG9> Any fouls committed during the *Autonomous Period* that do not affect the final outcome of the match, but do affect the outcome of the *Autonomous Bonus*, will result in the *Autonomous Bonus* being automatically awarded to the opposing *Alliance*. 