



## VEX U

### Introduction

We are thrilled to continue the exciting VEX U program (formerly known as the VEX Robotics Competition College Challenge) for another year. There are so many colleges and universities which already use the VEX Robotics Design System in their academic programs it is only natural that they have a place to pit their skills against each other in some friendly competition. Just like past seasons, there will be a culminating event at the VEX Robotics World Championships along with regional tournaments across the world. Not only does everyone get to see which school has what it takes to be a Champion, but the schools participating get the chance to show their stuff in front of thousands of future engineers and really demonstrate what makes their school remarkable.

### Event Information

Several of the University partners participating in VEX U will be holding tournament events in addition to the capstone competition at the 2015 VEX Robotics World Championships. For more information on VEX U events refer to <http://robotevents.com/robot-competitions/college-competition> to find event details, pricing, and registration info.

### Game, Robot, and Tournament Rules

VEX U uses the VEX *Skyrise* field with **no modifications**. Anyone that already has a *VEX Skyrise* field can use it for a VEX U event or team.

Please consult the *VEX Skyrise* Game Manual for the foundation set of competition details. All the same Game, Robot, & Tournament rules apply except for the modifications listed in this document. In the event of a rules conflict, the rules listed in this document and rulings on the VEX U Q&A take precedence.

#### Game and Tournament Rule Modifications:

- <VUG1> Instead of a 2-team vs. 2-team format, VEX U matches will be played 1-team vs. 1-team, with a twist: each team will use TWO *Robots* in each match. This means every team gets to build their own partner!
  - o Teams are allowed to build as many *Robots* as they would like, but only TWO (2) may be used on the field during a *Match*. They may only bring two (2) *Robots* from the pit to the playing field for any *Match*.
  - o All *Robots* must pass inspection before they are allowed to compete.

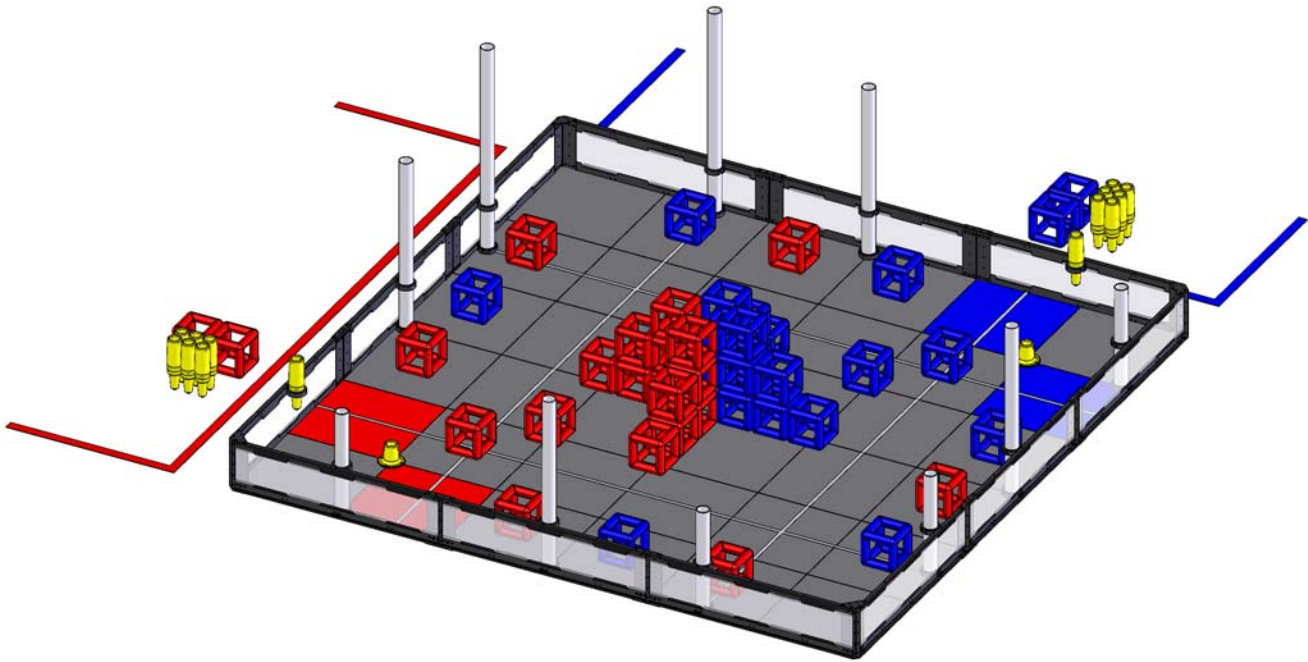
<VUG2> Qualification matches will be conducted like normal, in the 1 v 1 format described above.

<VUG3> An elimination tournament will be conducted similar to the Middle School & High School tournament. At the end of the competition, ONE team will emerge as the event champion.

- <VUG4> The *Autonomous Period* at the beginning of every *Match* will be 45 seconds.
  - a. All interaction with robots during the *Autonomous Period*, aside from fixing an immobile robot which has never left its legal starting position, is strictly prohibited. The intent of this rule is to ensure College teams are encouraged to develop advanced autonomous routines.

<VUG5> The *Driver Control Period* will be shortened to 75 seconds and will still immediately follow the *Autonomous Period*.

# VEX Robotics Competition - *Skyrise*



*Note: This appendix only details changes and additions specific to VEX U.  
Please make sure you refer to the VEX Skyrise game manual for full game rules and descriptions.*

## Game, Robot, and Tournament Rules cont.

### Robot Rule Modifications:

<VUR1> Teams must build two robots subject to the following size restrictions at the start of the match:

- a. Robot A must be smaller than 15" x 15" x 15"
- b. Robot B must be smaller than 24" x 24" x 24"

<VUR2> Teams are allowed to fabricate their own unique VEX parts from the following additional items, for each of their robots:

- a. Plastic cut from a single 6" x 6" x 1" block
  - i. Examples of "plastic block" are PVC, Delrin, and ABS
- b. Steel OR Aluminum cut from a single sheet no larger than 12" x 12" and no thicker than 0.070"
- c. Two plastic, 3D printed parts, each less than 3" x 3" x 3"
- d. Two plastic, 3D printed parts, each less than 3" x 6" x 6"

Note: these are not measured by "volume". Teams are restricted as though the components they are constructing were made from the raw materials listed.

<VUR3> Each Robot is allowed to utilize up to one (1) VEX ARM® Cortex®-based Microcontroller

- a. No other types of VEX Microcontroller are permitted

<VUR4> Each Robot is permitted to use up to twelve (12) VEX EDR motors or VEX Servos (Any combination, up to twelve)

<VUR5> Each Robot must use one (1) VEXnet module.

<VUR6> Each Robot is still only allowed up to two (2) operators and one (1) coach.

- a. Drivers MUST be post-secondary school individuals.
  - i. Any individual enrolled in a post-secondary school is eligible to be a driver.
  - ii. There are no restrictions on who can be a Coach in VEX U.
  - iii. Professionals not enrolled in post-secondary education are also NOT eligible to be a driver.

# VEX Robotics Competition - *Skyrise*

<VUR7> There is NO restriction on sensors and additional electronics used for sensing and processing except as follows:

- a. Sensors and Electronics MUST be connected to the VEX Microcontroller, and can only be connected via any of the externally accessible ports.
- b. Sensors and Electronics CANNOT directly electrically interface with the VEX motors or motor controllers.
- c. The additional Sensors and Electronics may only receive power from any of the following:
  - i. Directly from the VEX Microcontroller via any externally accessible port.
  - ii. From an additional VEX 7.2V Robot Battery or from a VEX 9.6V Transmitter Battery (only one (1) additional battery can be used for sensor power.)

<VUR8> Additional Motors, Servos and Actuators are NOT allowed.

<VUR9> No R/F communication is allowed between robots. However other non R/F forms of communication are permitted. (i.e. IR, ultrasonic, etc.)

<VUR10> Teams must display their team identification letters (e.g. "IFI", "ABCD") in two visible locations on opposing sides of the Robot. The team identification letters in total must be at least 2" high and 3" wide.

## Skills Challenges

This year, VEX U teams will have the opportunity to participate in Skills Challenges just like the High School and Middle Schools teams. All rules from Appendix B – Robot Skills Challenge and Appendix C – Programming Skills Challenge apply, with the following changes:

### Skills Challenge Rule Modifications:

1. Teams will compete with both of their Robots at the same time, with each robot starting in a legal starting position, both on Alliance Starting Tiles of the same color and all rules applying to both Robots.
2. Robot Skills Matches will be sixty (60) seconds long.
3. Programming Skills Matches will be sixty (60) seconds long.
4. Teams may not touch their Robots during the Programming Skills Matches.
5. Teams will be given fourteen (14) Skyrise Sections to use during each Robot and Programming Skills Match.

## Team Composition

We want to see Colleges and Universities from around the world register for VEX U to face off in head-to-head competition. While colleges are not limited to one team and while a team can consist of students from multiple colleges we hope that each team is identified with and proudly represents one (1) post-secondary institution. (e.g. "Clarkson University" vs. "UC Santa Barbara"). Of course, college level club teams and mixed composition teams are also encouraged to participate!

## Rule Clarifications

For any rule clarifications or questions please use the official Q&A at <http://www.vexrobotics.com/Skyrise>