What's New in Botball 2025

Technology Changes

We have improved connectivity for the wombat. You should be using Software v31.0.0 when you come to the tournament to avoid any connectivity issues. If you do not have your wombat updated connectivity problems may be a problem.

You can connect to computers and Chromebook directly using a dongle (USB A, USB C to Ethernet) and an ethernet cable. We strongly suggest you test this out and bring the dongle and cable with you to the tournament.

Instructions are found in the KIPR Resource Files found on the Team Home Base at KIPR.org

Connection Improvements

- Wired Ethernet Connection
  - Enables direct wired connection between Wombat and computer
  - New IP to type in URL is 192.168.124.1:8888 to access IDE
- Event Mode
  - Disables Wi-Fi broadcasting and enables Ethernet connection only
  - Toggle switch for Event Mode in About page
- Improved Wi-Fi Connection
  - Better usage of Wi-Fi channels and bands for more reliable Wi-Fi connection
- Network Mode Persistency
  - Event/Wi-Fi broadcasting/Client Modes all remain the same between boot ups

Updating the Wombat Improvements

- More options to update Wombats
  - USB with wombat-os-##.#.# (version number).zip in root folder of USB
  - Online requires direct Ethernet connection between Wombat and an internet source

Kit Part Changes in the 2025 Kit

- No Creates may be used in the 2025 Game
- Additions to the Kit
  a. A set of 4 mecanum wheels
  b. 3D printer
  c. KIPR Metal Parts
     i. 3 – 3X8 Channel (2 previously)
     ii. 4 – 4X12 Plates (2 Previously)
     iii. 2 – Chassis (1 previously)
     iv. 8 – Servo Brackets (4 previously)
     v. 4 – 1X5 Servo Horns (2 previously)
  d. Electronics
     i. 8 – Motors (5 previously)
     ii. 4 – Large Reflectance (2 previously)
        1. New large reflectance sensor returns different values
        2. 4 of any combination of large reflectance sensors is allowed

Changes in Documentation and Surveys

- Period 1
  - Teams should create an organizer instead of a calendar

    - Teams should describe plans for some sort of outreach or volunteerism in their community
    - Attend a game review
- Period 2
    - Slightly later documentation deadline
- Period 3
    - Includes images of your team performing your plan for outreach or volunteerism as well as what the plan was and the results
    - Submission requires every team member to complete a survey
    - Robot Setup Checklist including what you will do in the 90 seconds of setup time before a round. This should include things like making sure you have wait_for_light, shut_down_in, the robot fits in the start box, sensors and motors are plugged in, the robot is calibrated, or that you have the jig needed for setting up the robot and more.
    - Submit all STLs for 3D printed parts that you may use at the tournament. You do not need to submit parts from the parts lists that are provided by KIPR. **Otherwise, parts that are not submitted cannot be used on robots in the game.**
- Onsite
    - New questions in Q&A section
    - At least 4 photographs, CADS, drawings, physical models (3D printed parts, etc.), or graphs (previously only 3)
- Documentation Scoring Formula
    - $DocScore = \frac{2}{10}(Period1Doc\%) + \frac{2}{10}(Period2Doc\%) + \frac{2}{10}(Period3Doc\%) + \frac{4}{10}(OnsiteDoc\%)$

Game Board Changes

- Teams have **only one starting box** this year with a virtual height of 12” inches.
- Orange, red, and yellow poms are 2” poms this year instead of 1.5” poms.

Rule Changes

- Creates are no longer allowed as part of the kit.
- **Volume Rule:** To score in the Trays or Cups, some part of a game piece must break the volume of the scoring area. If two volumes overlap, game pieces will score inside the first volume that they break, rather than the one they score the highest in.
- **Cup Rule:** A full Cup includes at least two of a matching color of Drink and two Ice. Creating at least one full Cup will trigger the full Cup multiplier for all cups. Cups must be touching the surface of the game table to score.
- Teams may send up to 4 team members to the practice tables.
- If a team disagrees with a judge's decision, then **only the two team members at the table** may politely discuss the issue with the table judge and/or head judge.
- Wire management:
    - Tape (no game piece colors) may be used for managing and/or labelling wires. It may not be used for construction or structural purposes.
    - Twist ties may be used for managing wires. They may not be used for construction or structural purposes.
- If the **edges** of metal parts have sharp edges or burrs, they may be sanded or filed until smooth.
- Metal surfaces may be sanded to reduce friction.
- Standard 3/16” thick foam board **or** corrugated plastic as long as <u>all the pieces can be taken from</u>

the **same single** standard US letter-sized or **#1**, A4 footprint.

3D Printing

1. Only PLA may be used to print parts.
    a. Parts must be printed using a grayscale-colored PLA material.
    b. PLA material must only contain PLA.
    c. PLA must be printed and not in its raw unprinted form.
2. The number of 3D printed parts may not exceed 4 total between both robots at the table.
    a. A part is a single static piece.
    b. If there are moving parts in a 3D printed assembly, each movable part counts towards the 4 total parts. For example, a chain with 10 links in one print would still count as 10 parts.
    c. Only four 3D printed parts for use on the robot may be brought to the On-Deck area, excluding the required duplicate identical copies for measurement and any jigs being used for positioning the robots.
3. A single part cannot exceed the print volume of an Ender 3 V3 SE. The print volume of an Ender 3 V3 SE is 220 mm x 220 mm x 250 mm.
    a. If using a part on a robot, a second identical copy of the part may be required for judges to check the measurements. If a second identical copy of the part cannot be provided to the judge, the robot it is attached to may be disqualified for the round.
    b. A second identical copy of the part may be needed for onsite presentations.
    c. A box for measuring parts will be provided throughout both practice and tournament for teams to check part dimensions.
    d. At tournaments, judges may have a box of the correct dimensions that a part must fit in.
4. A STL file must be submitted for each part that may be in use on a robot prior to the tournament.
    a. The STL file(s) must be submitted during the 3rd period of documentation.
        i. Teams will be asked to show proof of STL file submission to the judge at the table if they are using a 3D printed part outside of the KIPR parts lists.
    b. STL files will be released to the whole Botball community on the team home base after the last regional tournament and after GCER.
    c. STL files specifically provided by KIPR **from the parts lists** do not need to be submitted.
5. 3D printing of jigs or other objects to assist in positioning robots in the start box is highly encouraged
    a. These parts will not count towards the part limit if they are not being used on the robots.
6. The surface of 3D printed parts may be sanded. The second identical copy of the part must also be sanded in the same manner.

7. The head judge may deny the use of a 3D printed part, at their discretion, based factors of safety or inappropriateness.
8. No 3D printing will be permitted at the event.