VEX Battling Robots - May 2009

Competition Rules

1. Team Information and Registration
   a. Teams must be composed of no more than four (4) student members
   b. The competition will not be held if there are not at least eight (8) teams registered by the registration cut-off date.
   c. Registration will be cut off at twenty (20) teams.
   d. There is no registration fee for Teams.
   e. Teams are required to provide technical drawings/sketches of their designs for pre-competition inspection. Failure to do so may lead to being unable to compete.
      i. Include dimensions (just a rough sketch)
      ii. Describe weaponry
      iii. Describe automated features of robots (code with comments is acceptable)
      iv. Electronic Component Bill of Materials (Must show number of motors)

2. Robot Rules
   a. Only ONE (1) PRIMARY robot will be allowed to compete per team in the Battling Robots competition. Though it is expected that teams will make changes to this robot at the competition, a team is limited to ONE (1) PRIMARY robot.
   b. Every robot will be required to pass a full inspection before being cleared to compete.
   c. At the beginning of any match, the maximum allowed size of a robot is 24” x 24” with NO height restriction. After the match begins, the robot may expand to any size.
   d. Weight Restriction – Robots may not be any heavier than 20lbs (9.1 Kg)
   e. Allowable Parts
      i. Robots and Weapons must be designed using only VEX components.
      ii. Robots and Weapons are limited to a total of FIVE (5) VEX motors or servos.
      iii. Robots and Weapons must be controlled by ONE (1) VEX Controller.
      iv. The only allowable source of power for the competition is a single (1) Battery Pack.
      v. Robot must have an easily accessible VEX RF Transmitter attached to their robot for remote control.
         Note: To assure that there is no cross-talk between competing robots, crystals will be supplied to each team during the competition.
      vi. Robot weaponry must be constructed out of official VEX parts only.
      vii. Teams may add non-functional decorations from parts not on the above list, provided that these parts do not affect the outcome of the match, and must be in the spirit of the competition. Violations may be penalized.
      viii. Teams may also use any non-metal materials for the purpose of shielding electronics. The shielding must not affect the operation of the opposing
robot, and must be in the spirit of the competition. Violations may be penalized.

3. Rules of Battle
   a. The field will be a standard VEX tournament field.
   b. Team Members are REQUIRED to wear Safety Glasses at ALL TIMES.
   c. Robots will start in the middle of one wall, opposite of the opposing team’s robot.
   d. Team members may not enter the field at any time during the MATCH.
   e. Only two (2) team members may be directly at the field during the MATCH.
   f. Each MATCH will consist of three (3) ROUNDS of two (2) minutes each. There will be one (1) minute between ROUNDS to change batteries and minor repairs.
   g. During Qualifying, each team will have a minimum of fifteen (15) minutes between for each MATCH for repairs or maintenance.
   h. If a robot is unable to compete in a MATCH for any reason, the team FORFEITS the MATCH. This is only applicable before the start of a MATCH, or else the team will lose by ruling of a KNOCK-OUT.
   i. Robots may not intentionally detach parts during any match, or leave mechanisms on the field. If a detached component or mechanism interferes with game play the offending team will be penalized three (3) points.
   j. If at any time the robot operation is deemed unsafe to spectators or human competitors, by the determination of the referees, the offending team may be disqualified. The offending team will lose by way of forfeit and earn zero (0) points.
   k. If a robot goes completely out-of-bounds (outside the playing field), it will forfeit the current MATCH but keep any points earned before the moment of infraction.

4. Definitions
   a. DISABLED – A robot that is no longer being able to physically move (after a five (5) second count) or defend itself by discretion of the referee.
   b. FLIPPED – A robot turned upside down to the point of being DISABLED.
   c. KNOCKED-OUT – A robot damaged to the point the being DISABLED.

5. Battling
   a. A robot may attack any part of its opponent’s robot. Keep this in mind during the design phase as to protect all critical components.
   b. If a robot is FLIPPED by its opponent during a round and cannot right itself, it will be considered DISABLED and the other team will win by terms of a KNOCK-OUT.
   c. If a robot is damaged to the point of being DISABLED or is considered to be damaged to the point of being unsafe, as determined by the Referee, the other team will win by terms of a KNOCK-OUT.
   d. If at the end of the MATCH both robots are operational, the referee will declare a winner based upon total points earned in a MATCH scored by the Judges during each ROUND.
e. A robot cannot pin (inhibit the movement of an opposing robot while in contact with any wall) an opposing robot for more than five seconds. If a referee determines this rule to be violated, the offending robot will receive a one (1) point penalty to its final MATCH score.
   i. Note: There is NO limit to the number of pinning infractions.

6. Scoring
   a. Judge’s Score - These scores are determined by the judges observing the match.
      i. Aggression Score - One (1) point will be awarded for each aggressive attack upon an opponent.
         1. Maximum of ten (10) points per ROUND
         2. Maximum of thirty (30) points per MATCH
      ii. Technical Score - One (1) point will be awarded for each tactical maneuver (i.e. attempted flip) or technical maneuver (i.e. avoiding a hit) completed by a team.
         1. Maximum of ten (10) points per ROUND
         2. Maximum of thirty (30) points per MATCH
   b. End of MATCH Bonus Scoring
      i. Teams will receive either three times (3x) their final Judge’s score for ending a MATCH by a KNOCK-OUT of an opposing team.
      ii. Teams will receive two times (2x) their final Judge’s score for ending a MATCH by winning a Judges Decision.
      iii. Teams will receive a base score of thirty (30) points for winning by the opposing team Forfeiting before a MATCH begins.
      iv. Teams that lose will carry their final Judges scores.
   c. A team will be decided the winner of a MATCH by which ever team has the higher total point score at the end of the MATCH, calculated after the Bonus scoring has applied.
   d. In the event of a tie score at the end of a MATCH, the team that had the highest Aggression Score will be considered the winner.
   e. The points earned during the qualifying ROUNDS will be used to rank the teams for the elimination rounds.

7. Tournament
   a. Each team who competes will be guaranteed a minimum of two (2) qualifying MATCHES. More matches may be added, depending upon the number of competitors.
      i. If a team plays in an extra MATCH as a “surrogate”, their score in the surrogate MATCH will not be counted towards their point total for determining the seeding of the elimination tournament.
   b. Points earned at the end of a MATCH will be used to rank the top teams for the Elimination tournament.
   c. The Elimination tournament will follow a standard “single-elimination” bracket style, with the team with the highest point total across all matches earning the top
seed. The number of “seeds” in the elimination tournament will be decided on the day of the competition.

d. MATCHES in the Elimination tournament will follow the same structure as the Qualification round.
   i. In the Semifinal and Final rounds, teams will be guaranteed only a minimum of FIVE (5) minutes between each MATCH.

e. See diagram below for the structure of the elimination tournament: