RoboCup Junior Australia Simple Simon Soccer Rules 2021

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Rules Summary

1. Teams will have a maximum of two infrared sensors. (No compass or gyro sensors)
2. All other sensors must come from Mindstorms EV3, RCX or NXT kits.
3. Omni wheels of any type are not permitted.
4. Only Mindstorms NXT-G or EV3 software can be used.
5. Games will be 5 minute halves with no half time break and a 4 minute break between games.
6. All programming should be done prior to the tournament.
7. If the ball hits the side wall, play will continue.
8. If “lack of progress” is called, the ball will paced at the nearest neutral spot.
9. “Damaged” robots can be removed at the team’s discretion.
10. If a robot is in a situation where it is about to kick an own goal, it can be removed.

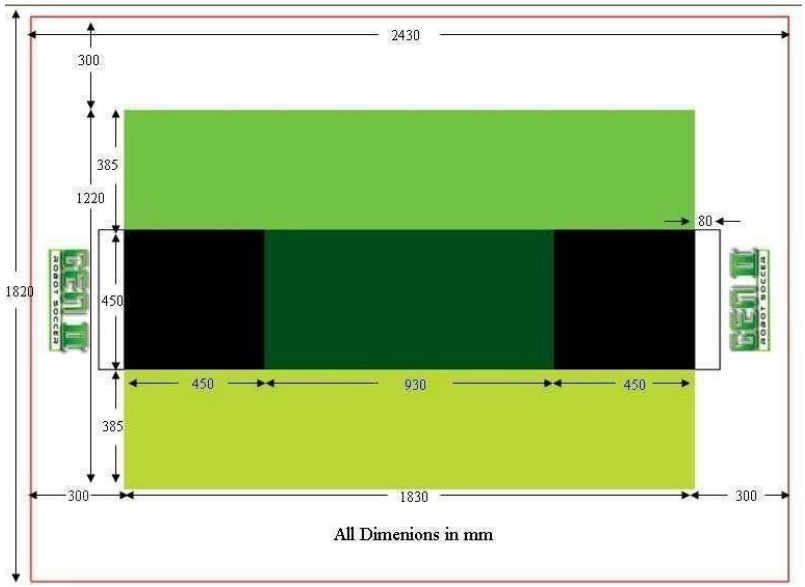
10.A damaged robot remains off the field for 30 seconds or until a goal is scored.

11.Any team that is not ready to start a game will lose a goal per minute for being late. The game clock will start at the scheduled time and the game will run according to the tournament schedule. Forfeits result in a 10-0 score line.

1 Playing Field

1.1 Floor

1.1.1. The playing field for Simple Simon League is 1220 mm by 1830 mm. The field has white borders 300 mm wide.



1.1.2. The floor of the playing field is covered with a printed vinyl GEN II, roll resistant GEN II mat available from Modern Teaching Aids. If the GEN II field is not available, a green carpet Standard League field can be used.

1.1.3. The central playing area should be placed so that it is flat and level. All white borders, including the ends of the field are flat and inclined by raising the outside of the border by 10-20 mm (the incline should allow the ball to roll from the top of the side incline to the neutral area line).

1.1.4. The field must be either placed on a carpet base (the recommended carpet is 3 mm thick) or outdoor carpet.

1.1.5. The field may be placed on a table or on the floor. *Hint: It is recommended that teams design their robots to cope with slight imperfections up to 5 mm on the field.*

1.2 Walls

1.2.1. Matte black walls are placed all around the field, including behind the goals.

1.2.2. The walls are at least 100 mm high above the playing field.

1.2.3. The walls can be constructed of any material as they are not essential to game play.

1.3 Goals

1.3.1. The width of each goal is 450 mm.

1.3.2. The back and sides of each of the goal's interior is painted matte, similar to CMYK cyan or yellow

The floor is white and the external sides of the goals are painted matte black.

1.3.3. The depth of each goal is 74 mm.

1.3.4. Each goal will have a 25mm black cross bar 140 mm above the playing surface.
1.3.5. The surface within the goal area is flat and level (horizontal).
1.3.6. The side walls of the goals extend to the end wall to prevent the ball from rolling behind the goals.

1.4 Neutral Zones

1.4.1. The neutral spots are in the middle of the field. They can be the spots in the centre of the field or at the colour borders either side of this spot

2 Ball

2.1 Specification

2.1.1. An infrared ball that meets the *RoboCupJunior Australia Infrared Soccer Ball Specification* (available on the RCJA Soccer web page) shall be used.

2.1.2. The ball will be used in a pulsed and stepped-waveform mode - the Elekit RCJ-05 ball will be operated in MODE A (pulsed).

2.1.3. The official ball for all RCJA tournaments will be the Elekit RCJ-05 soccer ball available from Modern Teaching Aids. *Note: The older, dark-grey coloured infrared ball previously sold by HiTechnic is also acceptable.*

3 Robots

3.1 Dimensions

3.1.1. The robot, as it will be positioned in gameplay, must fit inside an upright 220 mm diameter cylinder.
3.1.2. The robot height must be less than 220 mm.
3.1.3. The weight of each robot must not be more than 1.0 kg.
3.1.4. While being inspected, each robot must be positioned as it will be in gameplay and at its maximum size; i.e., anything that protrudes from the robot must be fully extended. If a robot has a moving part that extends in two directions, it will need to be inspected with this part operating. The robot must be able to operate **without touching the measuring cylinder.** *Hint: It is recommended to design your robot to a smaller size, such as 210 mm, to allow for tolerances.*

3.2 Construction

3.2.1. Aftermarket pulsed IR light sensors are the only non-LEGO parts that can be used in robot construction. All other parts used in the robot construction must be strictly LEGO-brand pieces and motors. **NO** other building materials can be used, including glue, tape, screws, etc.

Compass sensors or gyro sensors are not permitted

3.2.2. LEGO pieces cannot be modified in any way.

3.2.3. Robots must have a handle for referees to easily pick them up. The handle shall not be part of the robot construction and will be excluded from height measurements. Handles can be made from non-LEGO components. *Hint: Cable ties are not acceptable*

3.2.4. Cable ties or tape may be used to secure wires but must not be part of robot construction.

3.2.5 Omni wheels of any type are not permitted.

3.3 Control

3.3.1. Robots can only be programmed in Mindstorms EV3, LEGO Mindstorms NXT-G or Robolab. Text based programming of any kind, including C or RobotC, is **not** permitted.

3.3.2. Robots must be controlled autonomously.

3.3.3. Robots must be able to be started manually.

3.3.4. The use of remote control of any kind is not allowed.

3.4 Marking/Coloring

3.4.1. Competitors must mark or decorate their robots to identify them as belonging to the same team. These must not influence game play and will not be considered in the height restrictions.

3.4.2. Colours of robots or light transmitters must not interfere with sensor readings of other robots.

3.5 Team Structure

3.5.1. All teams shall consist of no more than two (2) robots. **Any substitution of extra robots during a tournament is forbidden and disqualification will result. Teams cannot enter the competition venue with more than two constructed robots.**

3.6 Ball Capturing Zones and Movement

3.6.1. Ball Capturing Zones are defined as any internal space created when a straight edge is placed on the protruding points of a robot.

3.6.2. The ball cannot penetrate the Ball Capturing Zone by more than 30 mm.

3.6.3. A robot cannot "hold" a ball. *Hint: Holding a ball means taking full control of the ball by removing all of its degrees of freedom. For example, this would mean fixing a ball to the robot's body, surrounding a ball using the robot's body to prevent access by others, encircling the ball or somehow trapping the ball with any part of the robot's body. If a ball stops rolling while a robot is moving, or a ball does not rebound when rolled into a robot, it is a good indication that the ball is trapped.*

3.6.4. The ball cannot be held underneath a robot, i.e. no part of a robot can protrude over more than 30 mm of the ball.

3.7 Goalies

3.7.1. If a goalie is used, it cannot limit its movement to a single direction on the field. It must be programmed to move in all directions.

3.7.2. The goalie must respond to the ball in a forward direction in an attempt to intercept the ball ahead of the goal. If required, its movement should be able to take some part of the robot outside of the penalty box (450 mm from goal). *Hint: The goalie cannot respond sideways, followed by a forward movement.*

3.7.3. Failure to respond to the ball with forward movement down the field will result in the robot being classified as "Damaged." (Section 4.7)

4 Game Play

4.1 Pre-game setup

4.1.1. Organizers will provide access to the competition area for calibration and testing prior to the competition and according to a schedule that will be made available at the start of the event. 4.1.2. This time is also for teams to express any concerns about the legality of opposing robots.

4.2 Length of Game

4.2.1. The game will consist of two 5 minute halves.

4.2.2. There will be no break in between the halves.

4.2.3. The game clock will run for the duration of the game, without stopping (except as noted in Referee's Timeout in section 4.9.4).

4.2.4. Teams can be penalized one goal per minute at the referee's discretion if they are late.

4.2.5. If a team does not report within 5 minutes of the game start, they will forfeit the game and the winning team awarded a 5-0 scoreline.

4.2.6. A game will end when there is a goal difference of 5 goals. The losing team may elect to continue playing, but the score (5 goal difference) will not change.

4.3 Start of Game

4.3.1. At the start of the first half of the game, the referee will toss a coin and the team first mentioned in the draw shall call the coin while it is in the air.

4.3.2. The winner of the toss can choose to kick-off in the first or second half.

4.3.3. The team not kicking off in the first half of the game will kick off to begin the second half.

4.4 Kick-Offs

4.4.1. Each half of the game begins with a kick-off.

4.4.2. All robots must be located on their defensive side of the field.

4.4.3. Robots must not be running.

4.4.4. The ball is positioned by the referee in the center of the field.

4.4.5. The team kicking off places their robots on the field first. Robots cannot be moved once they have been placed.
4.4.6. All robots on the team not kicking off must have some part of the robot in the penalty box.
4.4.7. On the referee's command, all robots will be started immediately by human team members.
4.4.8. Any robots that are started before the referee's command will be removed from the field for one minute.

4.5 Scoring

4.5.1. A goal is scored when the whole of the ball crosses the goal line. This coincides with the ball striking the back wall of the goal. The referee will announce the goal.
4.5.2. A penalty goal will be awarded if a ball deemed to be traveling into the goal strikes a defensive robot that has some part of it over the goal line and in the "in goal" area. *Hint: Robots should be built in a manner that the cross bar prevents them from going behind the goal line.*
4.5.3. After a goal is scored, a kick-off will occur. The non-scoring team will be awarded the ball.
4.5.4. "Own goals" will be treated as a goal to the opposition.

4.6 Lack of Progress and Ball Out of Play

4.6.1. This occurs if the ball is stuck between multiple robots ("forcing" situation) for a reasonable amount of time and has no chance of being freed or if no robot has any chance of locating the ball in a reasonable amount of time.
4.6.2. The referee will call "Lack of Progress" immediately when a robot is using greater power to "force" the ball past the opposition.
If a referee is slow to remove the ball and a goal is scored as a direct result of a robot "forcing" the ball through, the goal will be disallowed and the ball placed on the nearest neutral zone.
4.6.3. In the case of Lack of Progress, the ball will **first** be moved to the nearest neutral spot. If this occurs again, the ball will be moved to neutral spot at the centre of the field.
4.6.4. When Lack of Progress is called, any stuck robots will be freed using minimal movement by the referee or team captains at the request of the referee. **Stuck robots should not be moved at any other time.**
4.6.5. A ball is considered out of play if it strikes the wall behind either goal.
4.6.6. After a ball is considered out of play, it will be moved to the nearest neutral zone.

4.7 Damaged Robots

4.7.1. If a robot does not move and/or does not respond to the ball, it will be deemed damaged by the referee.
4.7.2. If a single robot remains in the "in goal" area for longer than twenty seconds, or is stuck against walls or goals, and shows no indication of returning to the playing area, it will be deemed damaged by the referee.
Hint: A small reverse command in a program will usually free a stuck robot
4.7.3. The players may remove a "damaged" robot(s) from the field at any time.
4.7.4. A damaged robot must remain off the field for at least thirty seconds or until a goal is scored.
4.7.5. A damaged robot must be repaired and may be returned with the referee's permission to the corner of the "penalty area" that is closest to the goal they are defending and does not advantage that robot, eg facing the ball. Goalies may be returned to the area in front of the goal.

4.7.6. Play will continue during removal, repair and replacement. **Note that the referee may choose to interrupt play if robot damage occurred because of a collision with an opposition robot.**

4.7.7. If a robot turns over of its own accord, it will be treated as a damaged robot and removed. If the robot is tipped over after a collision with an opposition robot, it can be righted by the referee and continue playing.

4.8 Interruption of Game Play

4.8.1. The situations listed in sections 4.6-4.8 may cause play to be interrupted, usually resulting in the movement of the ball to the nearest neutral zone while play is allowed to continue.
4.8.2. Play may also be stopped by the referee's signal but the game clock is not stopped, all at the discretion of the referee. All robots must be stopped immediately and returned to their position at the time of the referee's signal.
4.8.3. After a stoppage in play, play will resume on the referee's command and all robots are started simultaneously.
4.8.4. A referee may call "Referee's Timeout" for field repair, situations such as in 4.7.7 or 4.11.3 or if the tournament referee is called for rule clarification. The referee can elect to stop the match clock if the stoppage is lengthy.

4.9 Fouls

4.9.1. If a robot utilizes a device or an action which continuously attacks or charges a robot not in possession of the ball, the referee will call "foul". The team captain must then remove the robot from the playing field for at least one minute and correct the problem; play will continue (as in 4.7 "Damaged Robots").
4.9.2. If the robot continues to foul, it will be permanently removed from the game, a yellow warning sticker will be placed on the robot/s and the referee will record the infringement on the scorecard.
4.9.3. If a robot is damaged by a foul, the referee will stop the game and stop the clock for up to 2 minutes while repairs are made.
4.9.4. If a robot is removed from two games for "fouling", it will be disqualified from the tournament.

4.10 Humans

4.10.1. In general, movement of robots by humans is not acceptable.
4.10.2. Humans can only move robots at the instruction of the referee.
4.10.3. Before the start of each match, teams should designate one human who will act as "Captain", and be allowed to place, remove and replace robots during the game, based on the stated rules and as directed by the referee.
4.10.4. Other team members may start one robot, but after this, they are not allowed within the vicinity of the playing field. They are to remain more than one metre from the field while the ball is in play, unless otherwise directed by the referee.

4.11 Tied Games

4.11.1. In the event of a tie at full time during a non-finals game, the tied score will be recorded.

4.11.2. In the event of a tie at full time during a finals game, the following procedure will be followed:
4.11.3. Game play will not be stopped or interrupted.
4.11.4. The game will continue as “golden goal”. As soon as a goal is scored, the game will end.
4.11.5. If after five minutes, no additional goal has been scored, then only one robot from each team will be allowed on the field. Any team with two robots on the field must pick one robot to be taken off the field, then “golden goal” gameplay will continue. The robot chosen to be removed from the field is not allowed back on the field for the remainder of the game.
4.11.6. If after an additional five minutes, no team has scored a golden goal, the team who is ranked higher in the seeding will be considered to have won the game.

5 Conflict Resolution

5.1 Referee

5.1.1. **During game play, the referee's decisions are final.** Any argument with a referee's decision will result in a yellow warning card. If argument continues, the referee will give a red card resulting in immediate forfeit of the game.

5.1.2. If team captains are satisfied with the result of a game, they are to sign the score sheet at the conclusion of game play.

5.1.3. Any protest after the game should only be if the scoring is believed to be incorrect **or if a game result is in doubt.** After signing the score sheet, no protests can be lodged.

5.2 Rule clarification

5.2.1. Rule clarification may be made by any member of the RoboCupJunior Australia Technical Committee.
5.2.2. If a rule clarification is needed, the referee should stop the game immediately, call referee’s timeout (Section 4.9.4), stop the clock and confirm the ruling before continuing with the game.

5.3 Special Circumstances

5.3.1. Specific modifications to the rules to allow for special circumstances, such as unforeseen problems and/or capabilities of a team's robots, may be agreed to at the time of the tournament, provided a majority of the contestants agree.

6 Inspection

6.1 Scrutineering

6.1.1. All robots will be examined by a panel of referees before the start of each day of the tournament to ensure that the robots meet all constraints described in Section 3.

6.1.2. **It is the responsibility of teams to have their robots re-inspected if their robots have been modified at any time during the tournament.** This also includes damage or changes during game play. Any team that is deemed to have an illegal robot following a game, will forfeit that game.
6.1.3. Any violations of the inspection rules will prevent that robot from competing until modifications are made.
6.1.4. Modifications must be made within the time schedule of the tournament and teams must not delay game play while making modifications.

6.2 Robot Construction

6.2.0. Construction and Programming of robots has to be performed exclusively by the competitors.
6.2.1. Competitors will be interviewed to explain the operation of their robots in order to verify that the construction and the programming of the robots is their own work.
6.2.2. Competitors will be asked questions about their preparation efforts, and they may be requested to answer surveys and participate in recorded interviews for research purposes.
6.2.3. Commercial kits may be used but must be substantially modified by the competitors.
6.2.4. Proof of a full understanding of the program must be shown.
6.2.5. It is expected that tournament organizers will conduct verification interviews prior to the finals of all events.
6.2.6. If there is excessive mentor assistance or the work on the robots is not substantially original work by the competitors, then the team will be disqualified from the tournament.

7 Code of Conduct

7.1 Fair Play

7.1.1. Robots that cause deliberate interference and repeated damage to structurally sound robots during normal game play will be disqualified (See section 4.9).
7.1.2. Robots that cause damage to the field or the ball during normal game play will be disqualified from the tournament (see section 3.8).
7.1.3. Humans that cause deliberate interference with any robots or damage to the field or the ball will be disqualified from the tournament.
7.1.4. It is expected that the aim of all teams is to play a fair and clean game of robot soccer.

7.2 Behavior

7.2.1. All movement and behavior is to be of a subdued nature within the tournament venue.
7.2.2. Competitors are not to enter setup areas of other leagues or other teams, unless expressly invited to do so by team members.
7.2.3. Participants who misbehave may be asked to leave the building and risk being disqualified from the tournament.
7.2.4. These rules will be enforced at the discretion of the referees, officials, conference organizers and local law enforcement authorities.

7.3 Mentors

7.3.1. Mentors (teachers, parents, chaperones and other adult team-members) are not allowed in the competitor's work area.
7.3.2. Mentors are not to repair robots or be involved in the programming of robots. Robots or computers should not need to leave the competitor's work area during the day's game play.
7.3.3. Mentor interference with robots or referee decisions will result in a yellow card warning in the first instance. If this reoccurs, a red card will be awarded and the mentor will be asked to leave the venue.

7.4 Sharing

7.4.1. An understanding that has been a part of world RoboCup Competitions is that any technological and curricular developments should be shared with other participants after the competition.
7.4.2. Any developments may be published on the RoboCupJunior web site after the event.
7.4.3. This furthers the mission of RoboCupJunior as an educational initiative.
7.4.4. Teams are encouraged to publish footage of highlights on YouTube or social media, tagging "RoboCup Junior Australia Soccer" or its social media pages. Prizes may be awarded for the best clips at the discretion of the tournament organizers.

7.5 Spirit

7.5.1. It is expected that all participants, competitors and mentors alike, will respect the RoboCupJunior Australia mission.
7.5.2. The referees and officials will act within the spirit of the event.
7.5.3. It is not whether you win or lose, but how much you learn that counts.

8.0 Finals Selection

Teams will be selected for finals on the following criteria:

- Points scored
- Goals Scored
- Goal Difference
- The winning team if the two tied teams competed against each other.
- The strongest opposition, indicated by the highest ranked teams in their group.