RoboCup Junior Australia

Rescue Line Rules

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Spirit

It is expected that all participants, students and mentors, will respect the aims and ideals of RoboCup Junior as set out in our mission statement. In turn, the volunteers, referees and officials will act within the spirit of the event to ensure the competition is competitive, fair and most importantly fun. "It is not whether you win or lose, but how much you learn that counts."

Sharing

It is the overall desire of RoboCup Junior competitions, that any technological and curricular developments will be shared with other participants after the competition. Any developments including new technology and software examples may be published on the RoboCup Junior website after the event, furthering the mission of RoboCup Junior as an educational initiative. Participants are strongly encouraged to ask questions of their fellow competitors to foster a culture of curiosity and exploration in the fields of science and technology.

Local Variations

These rules will be in use for the 2017 Australian National Championships. State and Regional competitions may implement minor variations with respect to age groups, divisions and judging. These variations will be communicated to the participants through email and/or on their relevant website prior to the state or regional competition.

Notes vs. Rules

This document includes notes to the competitors and mentors, plus rules that are firm. This has been done to remove ambiguity. There is a notation to indicate whether the content of this document is to be read as a note or as a rule.

Table of Contents

1 The Challenge

1.1 The Scenario

1.1.1 A terrible earthquake has hit the city and caused a large chemical storage unit to rupture spilling thousands of litres of toxic chemicals in the centre of the city. There is a person trapped in a sinking rescue capsule (the Victim) in the chemical spill. Rescue crews are having trouble entering the city with the amount of rubble around, and rescue from the air has also been ruled out due to the noxious gases rising from the toxic chemicals directly above the spill. It has been decided that the best form of rescue is the deployment of an autonomous robot that can navigate to the scene, rescue the Victim and exit the chemical spill.

The robot can be deployed at the start tile (City Limits) or air dropped to any designated tile that is at least two (2) tiles away from the chemical spill (Drop Zone).

1.1.2 Primary Rescue Line: The robot must navigate to the scene, find and rescue the Victim by pushing or dragging (control) the Victim out of the chemical spill.

1.1.3 Secondary Rescue Line: The robot must navigate to the chemical spill and rescue the Victim by controlling the Victim and then manoeuvring and leaving it outside of the chemical spill in it in its original orientation. The robot must then save itself by exiting the chemical spill via the 'Spill Access Point'.

1.1.4 Open Rescue Line: The robot must navigate to the chemical spill and remove the correct rescue capsule from the chemical spill and place it in its original orientation safely on the evacuation platform for later collection by an aircrew. The robot must then save itself by exiting the chemical spill via the 'Spill Access Point'. The spill may contain one or more rescue capsules - uncontaminated rescue capsules with a Victim are silver and contaminated empty rescue capsules with no Victim are black. Rescuing the Victim will earn the team points for a successful control and rescue. Rescuing an empty rescue capsules will not earn the team points for control or rescue.

1.1.5 Teams will compete in a competition over a number of rounds and culminate in a final head to head round where the top three teams will be awarded first, second and third place as a result of them demonstrating the best solutions to the challenges according to the competition rules.
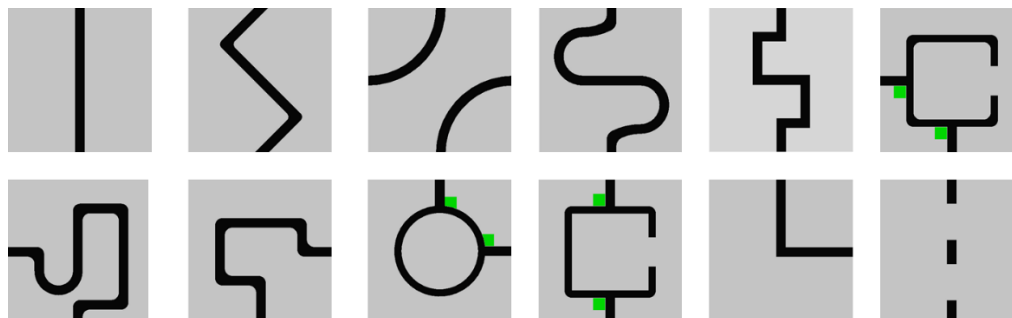
2 Playing Field

NOTE: All measurements in the rules have a tolerance of 5%.

2.1 Tiles

2.1.1 The field will consist of tiles, with differing patterns. Example of practice tiles:

2.1.2 Tiles can be of various sizes with the minimum tile size of 300 mm x 300 mm. Tiles can be any shape or thickness and be made from any material that provides adequate traction for the robot (e.g. melamine, fluteboard, banner material).

2.1.3 Tiles will have a uniform background colour allowing the line to be distinguishable from it by common light, colour and vision sensors. The background colour of a tile may be any colour.

2.1.4. There will be a minimum of 4 tiles in a competition field.

2.1.5 The arrangement of tiles may vary between rounds.

2.1.6 The top surface of adjacent tiles may differ in height up to 5 mm and be separated by up to 5 mm.

2.1.7 The final selection of tiles and their arrangement will not be revealed until the day of the competition.

Note: The official RoboCupJunior Australia Practice Rescue Mat can be obtained from Modern Teaching Aids, our Platinum Sponsor. These practice mats are an example of the types of tiles that can be used in competitions.

2.2 Lines

2.2.1 The line on the tiles will have a width between 15 mm and 20 mm and be a contrasting colour to the background colour of the tile.

2.2.2 The line on a tile will be distinguishable from the background colour of the tile by common light, colour and vision sensors.

2.2.3 The internal radius of a curved line will be a minimum of 40 mm.

2.2.4 The minimum distance from the edge of the tile to the line should be 90 mm for Primary and 135 mm for Secondary and Open. Where this is not the case support material will be added to the field to support the robot.

2.2.5 Lines may intersect to form an intersection.

2.3 Markers

2.3.1 Intersections markers can be placed anywhere except in the chemical spill.

2.3.2 Intersections markers are green and 40 mm x 40 mm in dimension and indicate the suggested path to follow. If no green marks are placed at an intersection, it means it is recommended to continue straight.

2.3.3 The intersection marker is always placed just before the intersection. See image below for possible cases.
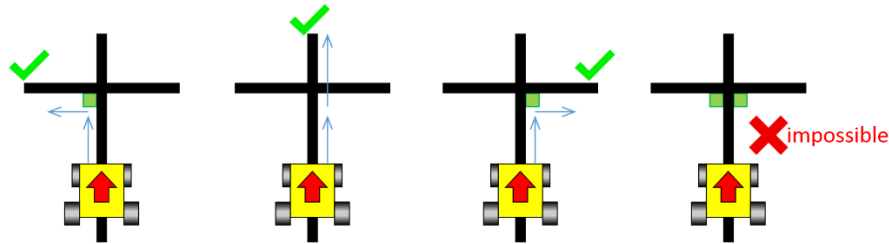
2.3.4 The colour of markers will be consistent across a single field.

2.3.5 Markers of a colour, with reasonable separation by common light and vision sensors from the tile background colour, may be placed in the field that will trigger behaviours on the robot. (e.g. a red marker may be used to make the robot stop moving for 2 seconds).

2.4 Speed Bumps, Debris and Obstacles

2.4.1 Speed bumps have a maximum height of 10mm. They are a similar colour to the tile's background.

2.4.2 Speed bumps will be fixed on the floor. They may be angled.

2.4.3 Debris have a maximum height of 3mm, and are not fixed on the floor. They are small materials such as toothpicks, paper, skewers, etc.

2.4.4 Debris may be spread across the tile.

2.4.5 Obstacles may consist of bricks, blocks, weights and other large, heavy items, which provide resistance when pushed or knocked by the robot. Obstacles will be a minimum of 15 cm high and have a base with a maximum diameter or diagonal length of 15 cm.

2.4.6 An obstacle may not cover more than one line.

2.4.7 A Robot is expected to navigate around obstacles and reacquire the line within 30 cm of the obstacle. Obstacles that are moved in any way will remain where they are moved to, even if it ends up prohibiting your robot from proceeding.

2.5 Ramps

2.5.1 Tiles on different levels are connected with ramp tiles. A ramp will not exceed an incline of more than 17.5 degrees from the horizontal surface.

2.5.2 Tiles may be elevated off the floor by elevator blocks placed in the corner of the tile. They may only be re-positioned to provide robot clearance by **an official**.

2.5.3 No provision will be made to assist robots that drive off a tile, from getting back on the tile.

2.5.4   Tiles may be elevated. Elevation will occur in 90 mm increments.

Note: Rescue Line courses may incorporate 'Tunnels'. Robots, therefore, must be designed so that they can navigate along any tile that may be placed on the base of the 'Tunnel'. See example. Only Referees are allowed to adjust the position of the supporting blocks.
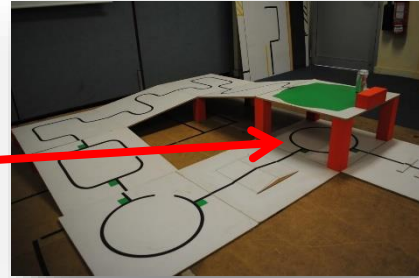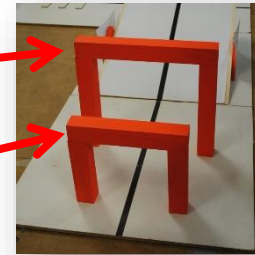
2.6   Doorways

2.6.1   The "**Doorway**". The doorway will:

Be 270 mm wide and 270 mm high for Open Rescue Line

Be 180 mm wide and 180 mm high for Primary Rescue Line and Secondary Rescue Line

2.6.2   A doorway may be placed on a straight section of the line with the two uprights approximately equidistant from the line. It will be free standing and will not be mounted or taped directly to the tile.

2.6.3   If a doorway is present on the course the robot must have passed through it before the score for the round will be recorded.

2.7   Chemical Spills

2.7.1   A chemical spill will be green in colour and be distinguishable from the background colour of the tile by common light and vision sensors. It may be any shape and size.

2.7.2   At the point where the black line meets a chemical spill, there will be a piece of smooth reflective tape (**Spill Access Point**) to indicate that the robot is entering the chemical spill. The spill access point will have a minimum size of 70 mm x 20 mm.

2.7.3   **Open Rescue Line**: Chemical spills can have one or more evacuation platforms located within them. There may be more than one chemical spill in a field. An evacuation platform will:

a)   be painted in a distinguishable colour.

b)   have a maximum height of 70 mm

c)   have a minimum width of 200 mm

d)   have a minimum depth of 70 mm

2.8 Start Tiles

2.8.1   The field can have at most two start locations:

        a)   City Limits

        b)   Drop Zone

2.8.2   The 'City Limits' tile consists of a lead-in black line and does not count for any points. Robots are to start behind the join between the start tile and the first course tile.

2.8.3   A tile may be nominated as a 'Drop Zone' tile as an alternative to the City Limits start tile. The Drop Zone tile must be at least two (2) tiles away from the chemical spill and can be used to air drop the robot to it. Once the game timer has started the Drop Zone cannot be changed (unless a restart is called). Note: the nominated 'Drop Zone' can be different for each round.

2.8.4   Any start tile may be used for the start of a round or when starting after a lack of progress (see rule 6.4) is called.

2.8.5.   A **Drop Zone Puck** will be a suitable size and colour so as to be easily identified by the Robot Handler and referees without interfering with the robot.

2.9 Victim

2.9.1   A rescue capsule **WITH** a Victim inside will be represented by a standard 375 ml aluminium can, standing upright, wrapped in aluminium foil or aluminium foil tape. This capsule will be referred to as the Victim.

2.9.2   The Victim will be located in a new position in the chemical spill for each round. It will be in a position of similar difficulty for every team in that round. The victim will not be placed on the chemical spill until the robot has commenced moving.

2.9.3   The Victim will not be moved or reset to the initial position or orientation after a restart. The rescue capsule must stay in the position and orientation the robot left it in.

2.9.4   **Open Rescue Line:** A rescue capsule contaminated by the chemical spill **WITHOUT** a Victim inside will be represented by a standard 375 ml aluminium can, standing upright, painted matt black or wrapped with matt black tape or paper. This capsule will be referred to as an empty capsule.

2.9.5.   Rescue capsules, with or without a victim, will contain material such as rice bringing the weight of the rescue capsule to a maximum of 100 gm. A liquid must not be used to add weight to the can.

2.10 Game Zone

2.10.1   An area around the game fields will be designated as the "game zone". Only officials, referees, timekeepers and the Robot Handler may enter the Game Zone.

2.10.2   Each team can have only one robot in the game zone.

2.10.3   Access to the game zone by competitors prior to the start of the competition will be allowed by the Officials discretion only.

3 Robot

3.1 Robot Configuration

3.1.1 Robot must be able to pass through the **Doorway** without moving it from its original position. The robot must do this autonomously during the game.

3.1.2 **Primary Rescue Line** robots must NOT increase in size, extend or use a device intended to sweep the Victim. Robots must demonstrate a search algorithm to 'find' and control the Victim as specified in section 1.1 - The Scenario.

3.1.3 **Secondary Rescue Line** and **Open Rescue Line** division robots must have a functioning and demonstrable mechanism with the potential to control AND rescue the Victim as specified in section 1.1 - The Scenario.

3.1.4 Any robot kit or building materials may be used, as long as the robot fits the specifications documented in these rules and as long as the design and construction are primarily and substantially the original work of the student(s). Commercial robot kits may be used but must be substantially modified by the students.

3.1.5 Robots should be well engineered and constructed. The robot should not fall apart during the game. If the robot has substantially failed mechanically, fallen apart (refer to 6.3.5) or is unable to complete the challenge, the robot will be deemed damaged and the Robot Handler will be asked to remove the robot from the field and the round will finish.

3.1.6 A team will not be able to compete with a robot substantially the same as another team's robot.

3.1.7 A team will not be able to compete with a robot that is identical to another team's robot from previous years.

3.1.8 Robots that cause interference with other robots or damage to the field or the Victim will be disqualified.

3.2 Robot Control

3.2.1 Robots must be started/restarted manually by the Robot Handler.

3.2.2 Robots must be controlled autonomously.

3.2.3 Pre-mapping and types of dead reckoning (i.e. configuring the robot's program based on predefined locations, tiles, obstacles, location of victim, number of victims etc. before game play) are prohibited.

3.2.4 The use of remote control of any kind is forbidden.

3.2.5 Robots must not damage any part of the field in any way.

3.3 Inspection

3.3.1 Teams may be scrutinised to establish the ownership of the robot design.

3.3.2 The robot will be inspected by a panel of referees before/during or after the tournament to ensure that the robot adheres to the rules of the tournament.

3.3.3 It is the responsibility of teams to have their robot re-inspected if their robot is modified at any time during the tournament.

3.4   Violations

3.4.1   Any violations of the inspection rules will prevent the robot from competing in a round until modifications are effected.

3.4.2   Modifications must be made within the time schedule of the tournament. Game play will not be delayed due to late teams.

3.4.3   If a robot fails to meet all specifications (including modifications) the robot will be disqualified from that round (but not the tournament).

3.4.4   If it is determined that the work on the robot is not substantially the original work of the team members or the construction or programming of the robot be deemed not that of the team, the team will be referred to the officials. Should the officials uphold the view of the scrutiniser, the team may be disqualified from the competition.

4 Inspection

4.1   Electronic Submission

4.1.1   Two (2) weeks prior to the competition, each team must electronically submit their journal and program or source code to the competition organisers via the competition web site.

4.2   Interviews

4.2.1   Teams may be required to attend a technical interview to explain the operation of their robot in order to verify that the design, construction and programming of the robot is the students' work. There are no set questions. If interviews are being conducted, either a schedule will be released, or teams will be advised to go for an interview throughout the competition prior to the finals.

4.2.2   Teams must bring their journals, logbooks or design diaries and a running laptop to their interview with their program open and be able to talk through the logic of the program with the interviewer. Screenshots of the program are unacceptable.

4.2.3   Interviews are not scored and do not contribute to team overall score.

4.2.4   Team member(s) will be asked questions about their preparation efforts, and they may be requested to answer surveys and participate in videotaped interviews for research purposes.

4.3   Journal / Log Book

4.3.1   All teams must maintain a journal or design diary detailing the design, development and construction of the robot and its programs as part of the learning experience. The journal can be in the form of a written document, PowerPoint presentation, website or blog, etc. Journals are not scored and do not contribute to the team's overall score but will be used to determine ownership of designs.

4.3.2   Construction of components (not freely or commercially available to all competitors) must be accompanied by full documentary proof that the developments were wholly the work of the students. This should be in the form of technical documentation showing all stages of design, development, testing and construction.

4.3.3   Failure to produce documentary proof of students' work may result in the robot or bespoke component not being allowed to compete in the tournament.

4.4 Journal / Log Book Criteria

4.4.1 The following headings are a guide in the development of student journals. Note: these criteria are mapped to the Australian National Technologies Curriculum

Team Name	
Team Members	List each member's role
School or Organisation	
Problem Definition	Define and decompose the problem
Planning	Identify a number of possible solutions to meet the requirements and constraints
	Identify the roles of the team and the order of tasks
Solution Design	Design the user experience of a digital system
	Design Algorithms and validate them.
Implementation	Implement modular programs, applying selected algorithms and data structures
Evaluation	Critically evaluate the developed solution.
Student Collaboration	Create innovative solutions for sharing your ideas and information.
	Plan and manage projects using an interactive and collaborative approach
Robot	Construction Photos
	Code

5 Teams

5.1 Definition

5.1.1 A team should have a minimum of 2 members and a maximum of 5 members.

Note: An individual participant is allowed to compete in a RoboCup Junior Australia National Rescue Challenge as an individual only once. To do so the individual must seek approval from the Challenge Committee. If a team can only afford, or due to extenuating circumstances, cannot send more than one member to a competition, then this is allowed as the Journal / Log book will show that they have been part of a team.

5.1.1.1 Students will participate in ONLY ONE (1) of the three (3) Rescue Line divisions: Primary Rescue Line, Secondary Rescue Line or Open Rescue Line. Teams can also compete in Rescue Maze.

5.1.2 RoboCup Junior Australia age limits for team members are:

5.1.2.1 **Primary Rescue Line**: Open to students studying at a recognised primary study provider. Note: Team members can compete any number of times whilst they are enrolled at a recognised primary study provider.

5.1.2.2 **Secondary Rescue Line**: Open to all students studying at a recognised secondary study provider. Note: Team members are only eligible to compete for a total of two (2) years in this division after which they must participate in the RoboCup Junior Australia Open Rescue Line division.

5.1.2.3 **Open Rescue Line**: Open to all students studying at a recognised secondary or primary study provider

5.1.3 Each round, one team member is nominated as the Robot Handler. Only the Robot Handler is permitted to enter the game zone and handle the robot during the round. All other team members must remain outside the game zone unless authorised by the Referee.

5.1.4 The Robot Handler is the only team member permitted to communicate directly with the referees and officials.

6 Game Play

Games will be organised into rounds, then a finals series.

6.1 Length of a Game

6.1.1 Organisers will ensure that the competition field design will be of adequate length for this time limit.

6.1.2 A robot will have a maximum time limit to complete the course. Time limits are:

Division	Game Length (sec)	Calibration Window
Primary Rescue Line	120	Prior to the game clock starting
Secondary Rescue Line	150	Prior to the game clock starting
Open Rescue Line	240	After starting the game clock

6.2 Pre-Game

6.2.1 The referee will ask the Robot Handler if they would like to nominate a Drop Zone. If the Robot Handler elects a Drop Zone, the tile will be marked with the Drop Zone Puck in one of the corners.

6.2.2 The referee will ask the Robot Handler if they are happy with the course. After positive acknowledgement, the Robot Handler may place the robot on the course ready to start.

6.2.3 The robot must start from either the City Limits or from the nominated Drop Zone. The entire robot must be behind the join between the start tile and the next course tile.

6.2.4 The referee will ask the Robot Handler if they are ready to start. The Robot Handler must indicate to the Referee they wish to commence the Rescue run.

6.3 Game Play

6.3.1 Once a team is ready to perform a scoring run, they must notify the referee. The referee will indicate to the Robot Handler that they may proceed. At this point the round begins and the referee starts the game timer for the round.

6.3.2 **Open Rescue Line** - Calibration of the robot is only permitted once the timing of the round has begun.

6.3.3 Robots may move in any direction from the Drop Zone.

6.3.4 Once the round has begun, the robot is not permitted to leave the game zone for any reason.

6.3.5 Modifying a robot, once a round has begun, is prohibited. This includes: adding, removing or remounting parts

6.3.5 Any parts that have fallen off during a round, intentionally or otherwise, are to be left in the game zone and cannot be moved or removed by the Robot Handler until the run is over or a restart is called (see rule 3.1.5).

6.3.6   The robot must follow the line completely to enter the chemical spill.

6.3.7   Once the robot has entered the chemical spill tile it is no longer required to "follow the line". It may enter the chemical spill in any orientation in its efforts to rescue the Victim.

6.3.8   To rescue the victim:

6.3.8.1 **Primary Rescue Line**, The Victim is considered rescued when it is completely outside the chemical spill.

6.3.8.2 **Secondary Rescue Line**, Control of the Victim means the Victim will move with the robot no matter which direction the robot moves (forward, backwards or rotating in either direction.) The Victim is considered rescued when it is completely outside the chemical spill and has been released in an upright, top up orientation by the robot.

6.3.8.3 **Open Rescue Line**, Control is defined as having lifted the Victim to a height that will allow the Victim to be placed on the platform and maintain the lift while the robot is moving. The Victim is considered rescued when it has been placed on the evacuation platform in an upright, top up orientation and has been released by the robot.

6.3.9   The round is considered complete when

6.3.9.1 the maximum possible points for the round are achieved

6.3.9.2 the game timer has run out.

6.3.9.3 the Robot Handler declares an end to the scoring run.

6.4   Lack of Progress

6.4.1   A lack of progress occurs when:

6.4.1.1 the robot is touched by a human

6.4.1.2 the Robot Handler calls a Lack of Progress (for example if the robot is about to fall and be damaged or the robot is malfunctioning).

6.4.1.3 the robot knocks over the Doorway or moves it from the original tile it was positioned on.

6.4.1.4 the robot is stuck in the same place or loses the black line without regaining it by the next tile in the sequence (see figures below in 6.4.1.7).

6.4.1.5 the robot moves completely out of the field.

6.4.1.6 the robot exits the chemical spill in a direction other than via the 'Spill Access Point' or exits without attempting to rescuing the Victim.

6.4.1.7 the robot ceases to follow the line on that tile unless there is an obstacle on that tile that must be avoided. (see rule 6.5).

Note: Robots are not allowed to take shortcuts within a tile, the line shape must be substantially followed.
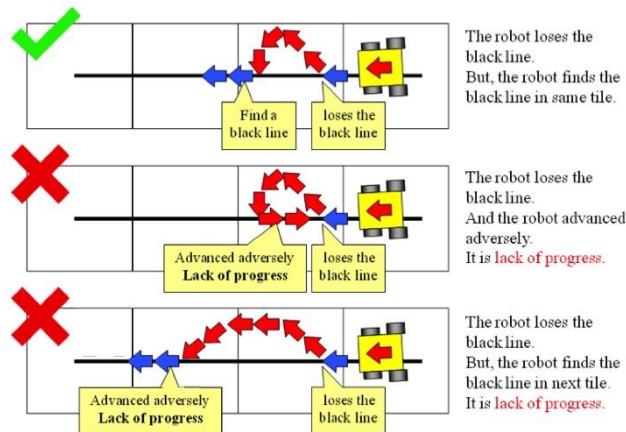
6.4.1.8   the robot fails to reacquire the line within 30 cm after moving around an obstacle.

6.4.2   A robot travelling towards, and then exits the field via the City Limits start tile, may re-start the course with no Lack of Progress penalty.

6.4.3   If a Lack of Progress occurs, the robot must be repositioned at one of the Start Tiles (see rule 2.8.1) and started.

6.4.4   Only the Robot Handler is allowed to start the robot.

6.4.5   There is no limit to the number of starts due to lack of progress within a round.

6.4.6   The game clock will continue running during all starts and restarts.

6.4.7   A team may call for a restart to their scoring run. This allows the team to change programs, change code, modify the robot and set a new drop zone.
Note: The clock does not reset and continues running.
Note: All points earned prior to the restart are invalid and scoring begins again once the robot commences a new scoring run.

6.4.8   The Robot Handler may choose to make further attempts at the course to earn additional points available for completing tiles, obstacles, speed bumps, etc. that have not already been earned by calling a lack of progress and starting from a designated start tile (see rule 2.8.1).

6.5   Following the Line

6.5.1   Where there are multiple paths, the robot may take any path.

6.5.2   Where the line is discontinuous, and there is no continuous path through the tile, the robot may search for the recommencement of the line, but must not completely leave the tile before re-finding the line.

6.5.3   A robot is considered to be following the line as long as some part of the robot is over the line while being viewed from directly above the robot by the referee.

6.5.4   Where a line exists, some portion of the line segment should be under the robot (see rules 6.4.1.7 and rule 6.4.1.8 for regaining the line).

6.6   Scoring

6.6.1   Teams will be awarded 10 points for each line follow tile that their robot successfully negotiates. E.g. robots reaching the 4th tile would have successfully negotiated 3 tiles and be awarded 30 points.

6.6.2   Teams will gain an extra 2 points for each intersection marker they correctly follow. E.g. if a robot correctly follows both shortcut markers on the roundabout, it will be awarded 10 points for completing the line follow of the tile and 4 points (2 + 2) for correctly following the two shortcut markers.

6.6.3.   Rescue Teams will be awarded an additional 20 points for fully exiting the Chemical Spill via the 'Spill Access Point'. The robot must reacquire the line and begin to line follow **after** successfully rescuing the Victim OR attempting to rescue the Victim before the points are awarded.

6.6.4   **Scoring Summary**:

Action Completed	Score
Tile	+10
Follow an intersections marker	+2
Execute a robot behavior triggered by a coloured marker or interaction with an element in the field.	+5
Ramp	+5
Speed Bump	+5
Debris	+5
Obstacle	+10
Rescue Line Primary – Rescue Victim	50 for Rescue
Rescue Line Secondary – Rescue Victim	50 for Control 50 for Rescue
Rescue Line Open – Rescue Victim	50 for Control 50 for Rescue
Rescue Line Open – Control or Rescue of an empty capsule	0
Secondary and Open - Exit the chemical spill via the spill access point and reacquire the line	20

6.6.5   Points will be awarded only once for successful completion of an element of the course.

6.6.6   5 points is deducted from the score for each lack of progress, up to a maximum of 20 points deducted.

6.6.7   A team that elects to end their scoring run before the round timer has run out will receive the following penalties:

6.6.7.1 **Rescue Line Primary** - no penalty

6.6.7.2 **Rescue Line Secondary** - 15 points

6.6.7.3 **Rescue Line Open** - 15 points

6.6.8   No team can end a round with a negative score.

6.7   Preliminary Rounds

6.7.1   All preliminary round points awarded will be normalised to a score out of 100.

6.7.2   There may be multiple preliminary rounds, depending on the time constraints of the tournament.

Note: National competitions will aim to host a minimum of 5 rounds.

6.7.3   Each team will have one scoring run per round.

6.7.4   Officials at the competition will determine the order and nature of how each round will be conducted. All teams must consult with the officials at the start of the competition to be informed on how the playoff rounds will be run.

6.7.5   After the preliminary rounds have been run, teams will be ranked according to their cumulative Score. This will be calculated by the addition of the normalised scores of each round minus the score of their worst round.

6.8   Final

6.8.1   The first, second and third placed teams will be determined by a Head to Head Finals process called the Trophy Rounds.

6.8.2   There will be maximum of three (3) teams in the Trophy Round playoff. The 3 teams will be determined by selecting the top 3 ranked teams from the preliminary rounds. Should there be more than 3 teams in the top 3 (tied scores), further playoff rounds will be run as a tie break. The scores for these rounds will only be used for the purpose of breaking the tied scores.

6.8.3   The three finalists will rotate through and attempt each of the courses. The team with the highest cumulative score will be judged the winner. Second and third placings are also determined by the ranked cumulative scores.

6.9   Special Circumstances

6.9.1   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 teams agree.

7 Conflict Resolution

7.1   Referee and Referee Assistant

7.1.1   All decisions during game play are made by the referee or the referee assistant who are in charge of the arena, persons and objects surrounding them.

7.1.2   During game play, the decisions made by the referee and/or the referee assistant are final.

7.1.3   At conclusion of game play, the referee will ask the Robot Handler to sign the score sheet. The Robot Handler should be given a maximum of 1 minute to review the score sheet and sign it. By signing it, the Robot Handler accepts the final score on behalf of the entire team; in case of further clarification, the Robot Handler should write their comments in the score sheet and sign it.

7.2   Rule Clarification

7.2.1   If any rule clarification is needed, contact the RoboCup Junior Australia Rescue Technical Committee.

7.2.2   If necessary even during a tournament, a rule clarification may be made by members of the RoboCup Junior Australia Rescue Technical Committee and Organising Committee.

7.3   Special Circumstances

7.3.1   If special circumstances, such as unforeseen problems or capabilities of a robot occur, rules may be modified by the RoboCup Junior Australia Rescue Organizing Committee Chair in conjunction with available Technical Committee and Organizing Committee members, if necessary even during a tournament.

7.3.2   If any of the team members/mentors do not show up to the team meetings to discuss the problems and the resulting rule modifications described at 7.3.1, it will be considered as an agreement.

8 Code of Conduct

8.1   Spirit

8.1.1   It is expected that all participants (students and mentors alike) will respect the aims and ideals of RoboCup Junior as set out in our mission statement.

8.1.2   The volunteers, referees and officials will act within the spirit of the event to ensure the competition is competitive, fair and most importantly fun.

8.1.3   It is not whether you win or lose, but how much you learn that counts!

8.2   Fair Play

8.2.1   Robots that cause deliberate or repeated damage to the arena will be disqualified.

8.2.2   Humans that cause deliberate interference with robots or damage to the arena will be disqualified.

8.2.3   It is expected that the aim of all teams is to participate fairly.

8.3   Behaviour

8.3.1   Participants should be mindful of other people and their robots when moving around the tournament venue.

8.3.2   Participants are not allowed to enter setup areas of other leagues or other teams, unless explicitly invited to do so by team members.

8.3.3   Teams will be responsible for checking update information (schedules, meetings, announcements, etc.) during the event. Update information will be provided on notice boards in the venue and (if possible) on the local competition website and/or the RoboCup or RoboCupJunior websites.

8.3.4   Participants who misbehave may be asked to leave the building and risk being disqualified from the tournament.

8.3.5   These rules will be enforced at the discretion of the referees, officials, tournament organizers and local law enforcement authorities.

8.4   Mentors

8.4.1   Adults (mentors, teachers, parents, chaperons, translators and other adult team members) are not allowed in the student work area.

8.4.2   Sufficient seating will be supplied for mentors to remain in a supervisory capacity close to the student work area.

8.4.3   Mentors are not permitted to repair robots or be involved in programming of their team's robots.

8.4.4   Mentor interference with robots or referee decisions will result in a warning in the first instance. If this recurs, the team will risk being disqualified.

8.4.5   Robots have to be mainly students' own work. Any robot that appears to be identical to another robot may be prompted for re-inspection.

8.5   Ethics and Integrity

8.5.1   Fraud and misconduct are not condoned. Fraudulent acts may include the following:

8.5.1.1   Mentors working on the software or hardware of students' robot(s) during the competition.

8.5.1.2   "Higher league group" and/or more advanced group of students may provide advice, but should not do the work for "Lower league group". For example, a secondary group helped to fix its peer primary group's work, software or hardware prior to and/or during the competition. This may also risk disqualification for the secondary group. See "Code of Conduct, 8.4.3 & 8.4.5". This applies not just to mentors, but also to higher league (advanced) groups of students as well.

8.5.2   RoboCupJunior Australia reserves the right to revoke an award if fraudulent behaviour can be proven after the award ceremony took place.

8.5.3   If it is clear that a mentor intentionally violates the code of conduct, and repeatedly modifies and works on the students' robot(s) during the competition, the mentor will be banned from future participation in RoboCupJunior competitions.

8.5.4   Teams that violate the code of conduct can be disqualified from the tournament. It is also possible to disqualify only a single team member from further participation in the tournament.

8.5.5   In less severe cases of violations of the code of conduct, a team will be given a warning. In severe or repeated cases of violations of the code of conduct, a team can be disqualified immediately without a warning.

8.6   Sharing

8.6.1   The spirit of world RoboCup competitions is that any technological and curricular developments should be shared with other participants after the tournament.

8.6.2   Any developments may be published on the RoboCupJunior website after the event.

8.6.3   Participants are strongly encouraged to ask questions to their fellow competitors to foster a culture of curiosity and exploration in the fields of science and technology.

8.6.4   This furthers the mission of RoboCupJunior as an educational initiative.