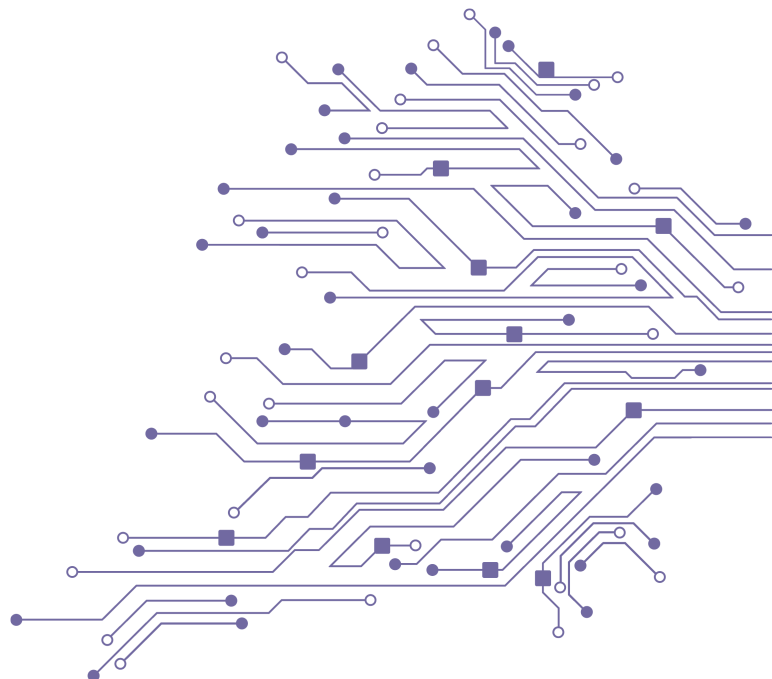




# UQ Micromouse Competition 2026 Specification V3.0





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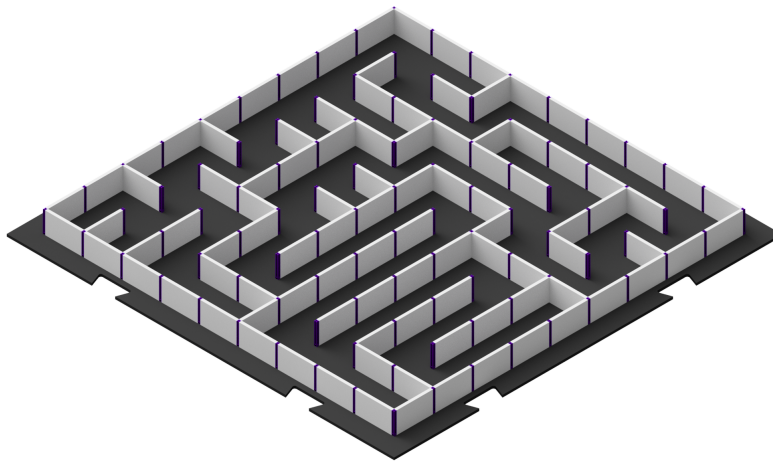
# Introduction

Micromouse is a robotics competition that has been run across the world since the 1970s. In it, competitors are tasked with developing a small autonomous robotic *mouse* that finds the quickest path to the centre of an  $N \times N$  maze. The UQ Micromouse Competition offers an additional challenge: time bonuses and penalties for passing and avoiding *gates*.

## Important Details

1. Teams can calibrate their mouse on an example maze on the 7<sup>th</sup> February 2026.
2. The competition will be held on the 8<sup>th</sup> February 2026
3. Team entries close on the 1<sup>st</sup> February 2026.
4. Competition entry is free.

Figure 1: Potential  $9 \times 9$  Maze without gates





# Team Eligibility

1. All members of the team must fall into one of the following categories:

- (a) Undergraduate University Student.
- (b) High School Students, provided a teacher accompanies them.
- (c) Open division.

For a team comprised of members from more than one category, the team will be entered into the division of the most senior team member.

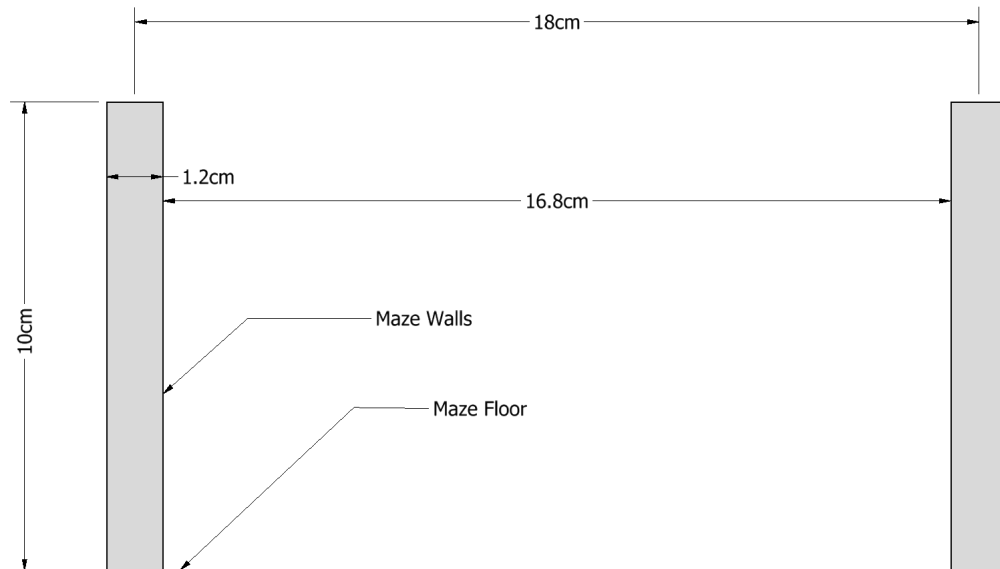
- 2. Teams may have a maximum of five official members.
- 3. Postal entries are permitted so long as the team organises an individual to operate the micromouse. This person must not be involved in the organisation or scoring of the event.
- 4. Teams must register using [this link](#) and provide the following supporting evidence in their publicly hosted version-controlled file repository (eg GitHub, GitLab, Bitbucket). More information can be found in Section 8.
- 5. One mentor is allowed per team but cannot have significant input to the design of the micromouse.

# Robot Specifications

- 1. The total budget for the micromouse must not exceed \$1,500AUD. Proof of this is covered in more detail in the 'Required Documentation' section (8)
- 2. The robot's length and width must be under 16cm.
- 3. The height of the mouse must not exceed 8cm.
- 4. The mouse can only be powered via battery.
- 5. The mouse must be controlled via an on-board system. External connection by any means during a team's round will result in disqualification.

# Maze Specification

Figure 2: Maze Wall Specification



1. The maze will be made up of a  $9 \times 9$  unit grid, where each unit length will be 18cm approx.
2. The maze will be comprised of MDF wood.
  - (a) The walls of the maze will be painted white.
  - (b) The floor of the maze will be painted black
  - (c) The time gates will be either red or green plates secured to the floor. The thickness of each plate will be less than 1mm. Their colour will be very saturated. See section 6 for more details.
  - (d) The maze walls will be 10cm tall and 1.2cm thick.
  - (e) Passageways will be 16.8cm wide.
3. The outside of the maze will be surrounded by a wall.
4. The mouse will start at one of the four corners of the maze.
  - (a) When placed at the starting point, the outside walls will be to the left and behind the robot.
5. Maze dimensions will be accurate to 5% or 2mm, whichever is less. This includes vertical distance (steps) between grid spaces.
6. "Floating" or "detached" walls which are not connected to the border should be expected
7. Do not make any assumptions about the lighting conditions of the maze.



# Challenge Rules

*Rules are subject to change with notice provided to given emails.*

1. No modifications may be made to the navigation algorithm of the mouse following the reveal of the maze on competition day.
2. Each team will have 10 minutes to compete. During this time, software changes are permitted for calibration purposes; however, no changes can be made to the navigational algorithm.
3. You may adjust the mouse between runs, but this will be included in the time used in a team's 10-minute window.
4. A team's micromouse is allowed up to 7 runs. Only the highest-scoring run will be considered.
5. A run can be aborted at any time
6. The run time (time to reach the centre) will start when the mouse starts moving and stops when it fully enters the centre tile.
7. No modifications should be made between runs that drastically alter the mouse's weight or profile during run time, such as removing sensor arrays or switching to lighter batteries.
  - (a) Teams may be allowed to change batteries, adjust sensors, and make repairs between runs.
8. The mouse may continue to map the maze once it has found the centre.
9. If the mouse reaches the centre, a team member can then return it to the starting tile manually.
10. All items that enter the maze must make it to the centre tile for it to be counted as a successful run. This includes "bread crumbs" or markers.
11. The mouse may not climb or fly over the walls of the maze.
12. Any attempt to destroy walls/parts of the maze by either teams or the robot will lead to a disqualification.
13. The team's mouse must be robotic. The use of live mice or rats will result in disqualification.

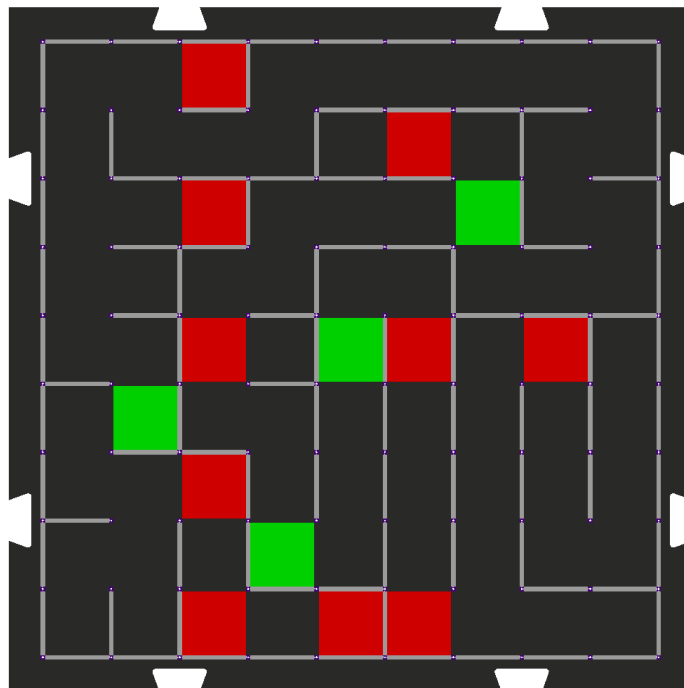
# Gate Bonuses

Some tiles of the maze will be coloured green or red; these are called 'gates'. Green represents a time bonus, and red represents a time penalty. A coloured tile will consist of a plate that will be secured to the floor of the maze. The vertical step onto the plate will be less than 1mm.

- a) If a mouse passes through a red gate, five seconds will be added to the time.
- b) If a mouse passes through a green gate, three seconds will be subtracted from the time.
- c) Each gate bonus can only be applied once per run. This means that should the mouse pass over the same gate twice in a run, its time bonus/penalty will only be applied once.

*Note: The coloured square may not cover the entire tile. a small border around the outside may be required to attach the square. At least 90% of the area will be covered. A possible gate layout can be seen in figure 3.*

Figure 3: Potential  $9 \times 9$  Maze with Added Gates





# Scoring

- Teams will be ranked according to the shortest time it takes to get to the centre of the maze.
- If a team fails to reach the centre of the maze, they will automatically be ranked below the slowest team to make it to the centre.
  - If several teams fail to reach the centre, the ranking between these teams will be based on 2 variables: the number of tiles away from the centre, and the time it takes to reach this point. The lower the score, the higher the rank.
  - The score will be calculated using Equation 1.

$$score = N_{tiles\_away} \cdot 25 + T \quad (1)$$

Where  $T$  is the time in seconds to reach the location  $N_{tiles\_away}$ , this is measured as the fewest number of tiles the mouse would have to travel to reach the centre (ignoring any gate bonuses/penalties).

- As an example consider 3 teams.

Team A makes it to the centre in 300 seconds.

Team B doesn't make it to the centre within the 10 minutes, but they make it to 6 tiles away from the centre in 30 seconds, the score for that run (according to Equation 1) would be 180.

Team C doesn't make it to the centre but makes it 3 tiles away in 100 seconds, the score for the run will be 175.

The final ranking would be A, C, B (first to third). Even though Team A was the slowest, they made it to the centre, which ranks them higher than a team that didn't.

## Prizes

- Prizes will be awarded to the teams who place first and second according to the scoring system above.
- Though the budget is limited to \$1,500AUD, competitors will be awarded for designing the cheapest micromouse which is capable of finding the centre during a valid run.





# Required Documentation

Several items of documentation are required for a team to compete.

1. The source code. This includes the files containing any code that is required for the operation of a team's micromouse (this includes calibration programs).
2. A PDF containing details about the design of the micromouse. This should include images of the micromouse, CAD models, circuit schematics, algorithm flowcharts, etc., if applicable. This document must also include a list of the prices of all items purchased and used for the micromouse, including references such as receipts. If you already owned a part or were donated parts, include the estimated cost for that part. This is to ensure the \$ 1500 budget is not exceeded
3. A video no longer than 5 minutes to explain the design and the design decisions made along the way. Try to focus on the unique elements of your micromouse, even if they don't work out in the end.



# F.A.Q

## 1. When will this be held?

- The competition day is 8<sup>th</sup> February 2026. There is a testing and tuning day on 8<sup>th</sup> February 2026. This is a casual opportunity to test your system. There will be limited time for testing during the competition day.

## 2. Entry fee?

- There is no entry fee for 2026 micromouse

## 3. Can we use a kit for our micromouse?

- Yes, so long as it's within the maximum allowed budget for entry. However, entries using kits will not be considered for the prize for cheapest build.